

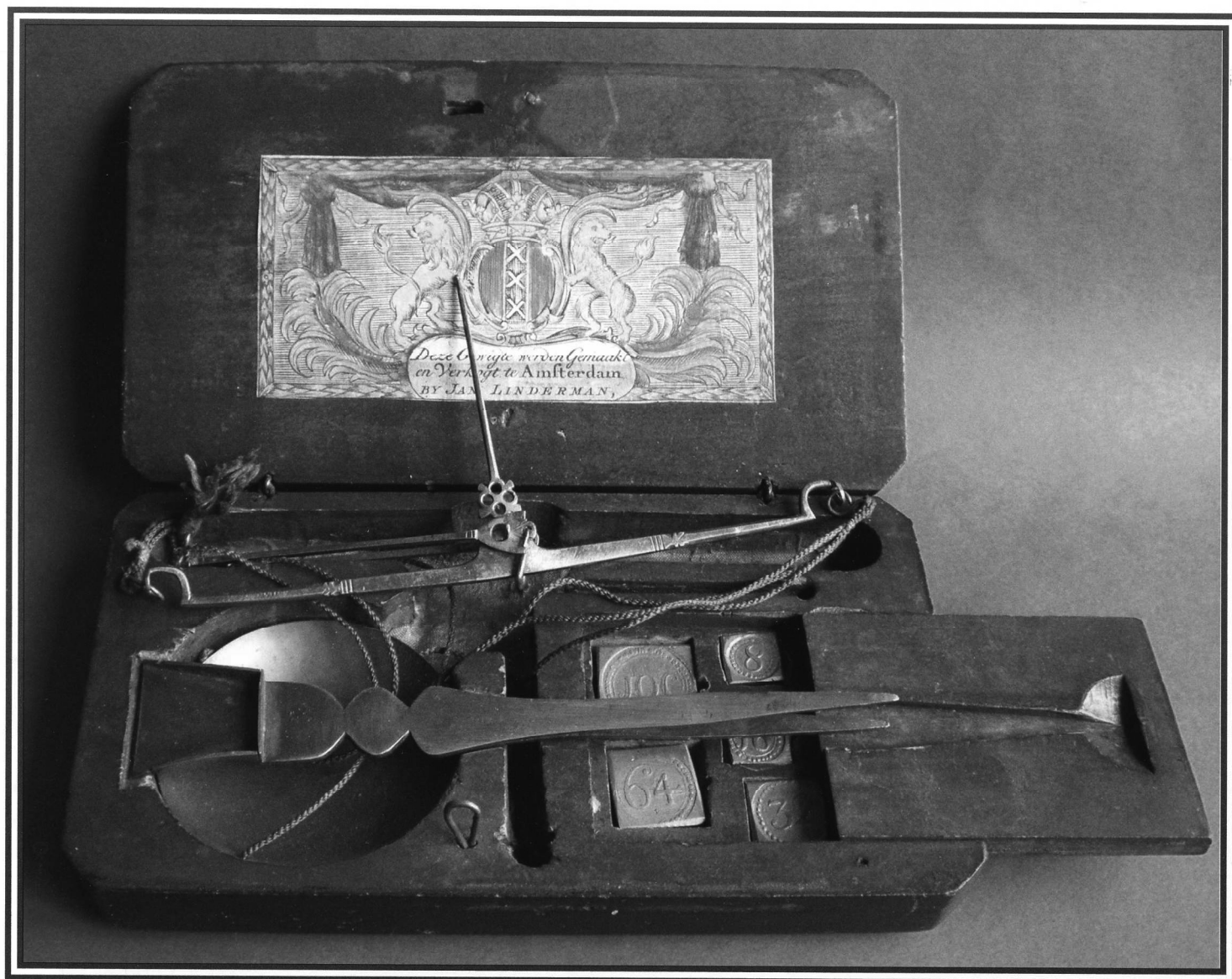


EQUILIBRIUM[®]

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2015 ISSUE NO. 1

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Cover Picture

The diamond scale featured on our cover was probably made by Jan Linderman III of Amsterdam who was working between ca 1785 and 1805. It is complete with its tweezer, shovel and most of its carat weights. The hardwood box measures 5 3/8" by 2 1/2" by 1 1/4" and has angled corners. Scales by the Linderman family are valued by collectors for their hand colored labels and the skill with which they were constructed. To read more about these scales see the article *The Lindermans of Amsterdam* on pages 4107-4114 and in future issues.

Diana Crawford-Hitchins Collection.

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

The Lindermans of Amsterdam 1 BY STEPHEN BARNETT

Introduction

Between about 1700 and 1850, five generations of Lindermans lived and worked in Amsterdam. They made and supplied coin scales and weights, diamond scales and weights, other equipment for the diamond and jewelry trade¹ and later, medicinal weights.

Figure 1. The Linderman Family Tree

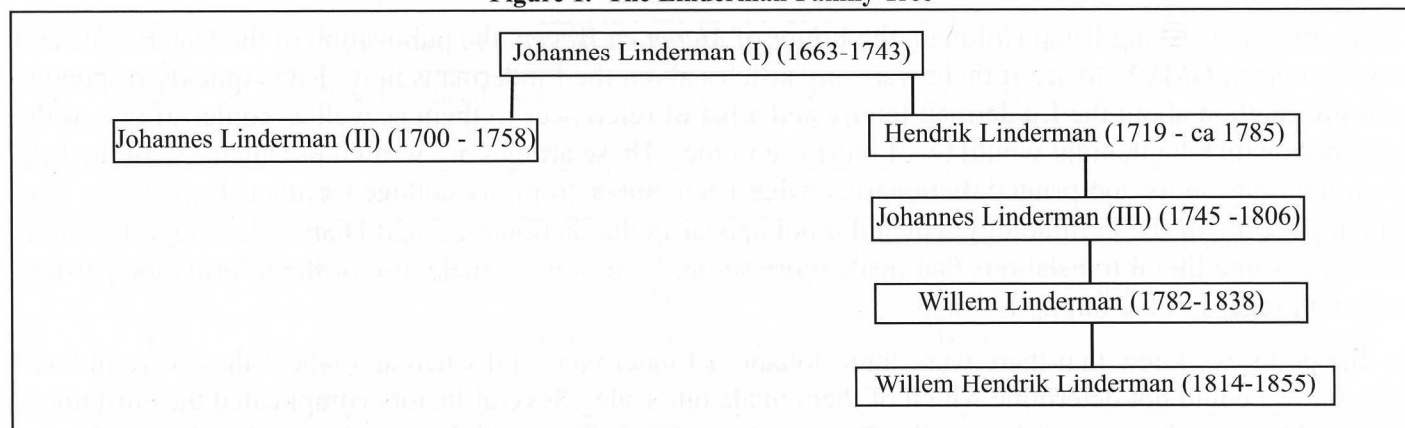


Figure 2. ♡♡ Box for D-1 as we first saw it with what we thought was an artistic design carved in the lid and two tortoise hooks.

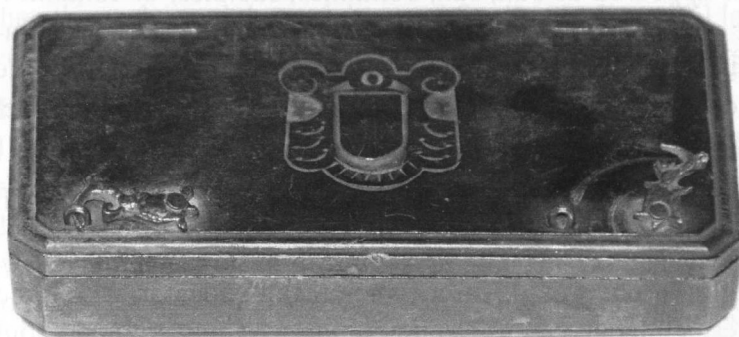


Figure 3. >> Inside the box for Linderman Diamond Scale D-1.

We had a whole list of questions. Who was Ioannes Linderman? When was he in business and where? What did he make? When did he make this scale? There was very little information in EQM. EQM 1992, Issue 3, pg 1606, in an article on coin weights by George Mallis, has a picture of a coin scale label by Jan Linderman from Amsterdam. Kisch, page 139 Fig 93 has a picture of a scale that looks like the one that we bought. The caption is *Typical Dutch weight and scale box for jewelers (carat scale)*. We found some additional information and a couple of other examples via a web search. The Streeter Collection has a Linderman diamond

My interest in the Lindermans began several years ago quite by accident. We were at an antique show and spotted a small wooden box in one of the dealer's showcases (Figure 2). Wondering what it might be, we asked the dealer to open it up. It contained a diamond scale and some carat weights. The inside of the lid had a brightly colored label. The maker's name on the label was "Ioannes Linderman" from Amsterdam. (Figure 3) After a brief negotiation with the dealer, it was ours to bring home.



scale and the Boerhaave Museum in Holland has a Linderman coin scale and a coin scale made by Jacob Listingh with two weights with the "makers sign" of Jan Linderman.

At the same time as we were doing the web search, we sent an email to Diana Crawford-Hitchins with a picture of our diamond scale and asked if she had any information about Ioannes Linderman. Her response and subsequent emails contained a wealth of information and pictures of two scales (a diamond scale and a coin scale) in her collection that, from the labels, were made by Jan Linderman and Johannes Linderman, respectively.

Diana suggested asking Ritzo Holtman, the Editor of *Meten en Wegen*, the publication of the Dutch scale and weight society, GMVV, to see if there were any articles about the Lindermans in it. Ritzo quickly responded with information about the Linderman family and a list of references to them as well as copies of two of the references which he thought would be of most use to me. These articles are written in Dutch. With the help of on-line translators and printed dictionaries, what I remember from my college German, Jaap Visser, who explained some of the terminology which did not appear in the dictionaries, and Diana who suggested alternatives to some literal translations that made more sense, I was able to make use of the information particularly with regard to the family history.

At this point, we knew that there were three Johannes Lindermans and when and where they were in business, but we could not determine which of them made our scale. Several factors complicated the attribution. First, as Diana said in one of the emails: *The one thing that took us a while to understand is that the history of the Netherlands is complicated. They had to use several languages according to who controlled them or who they were trading with. Hence the name John appeared as Jan, Ian, Johannes, Iaannes, or Iohannes. The Lindermans were very loose in their use of the various versions.* In addition, their labels did not distinguish between the Jan's by using, for example, their middle initial or the generation suffix to distinguish the second Johannes from his father. Finally, their working addresses overlapped, so the address on the label might not provide reliable distinguishing information.

Diana encouraged us to continue the research and to write this article, saying that the Linderman story is an important one that should be told in EQM.

My purpose in writing this series of articles is twofold. First, provide information that a collector, who has a scale with a Johannes (or one of the variants) Linderman label, can use to determine who made it and about when. If the scale does not have a label, this information may help to determine if it is of Dutch origin, from Amsterdam, and who made it and about when. The second purpose is to share what I have learned about the Linderman family and their lines of business. In addition to the information that Diana and Ritzo provided, I have been fortunate to acquire some additional scales and other reference material to use for this article.

In 2009, as I began this research, I asked Joe Lenorovitz if he had a Linderman scale in his collection of coin scales. I sent him pictures of the first one that I bought and pictures of Diana's Linderman coin scale. He sent me a description of a Linderman coin scale from his collection which provided me with another example. His son, Jeff, provided the pictures to include in this article. In the letter, Joe is comparing his with the one that Diana has.

Our boxes look the same as far as shapes go. Mine measures $5\frac{3}{8}$ " X $2\frac{1}{2}$ " X $1\frac{1}{4}$ " high. The colored label inside the lid looks just like mine. My scale has a 'hallmark' or maker's stamp on the round pan. The pull-out weight drawer is similar but the markings above the weights on yours look more like script-mine have printed letters. Some of the weights in the pull-out tray of mine have markings on the backs and some are plain. On the top inside of mine (where the scale is), there are compartments that were cut out to house the weights. Mine has 9 plus the one for fractional weights, yours shows 7 plus fractionals. All of my weights are marked on the under-side but not with the design you show. Several of mine have an 'L' on them. The markings on the flat surface that houses the weights are similar to mine. Your picture shows 3 flowers in the center but mine does not. The door that covers the space for the fractional weights was replaced on mine (whoever did it did a good job). I have a wooden pin that goes into it and locks in the slide out weight tray.

For comparison sake, I have, in my collection, a diamond scale made by Abraham Groengraft (1673-1745) from Amsterdam, who was a contemporary of the first Johannes Linderman.

For the rest of the article I refer to the samples of scales that I have examined as follows:

Table 1 - Designators for Examples of Linderman Scales	
Reference Title	Scale Description
D-1	Diamond scale - maker on label: Ioannes Linderman; author's collection
D-2	Large diamond scale - maker on label: Jan Linderman; author's collection
D-3	Small diamond scale - maker on label: Ioannes Linderman; author's collection
D-4	Diamond scale - maker on label: Jan Linderman; Diana Crawford-Hitchins collection
D-5	Diamond scale - maker on label: Abraham Groengraft; author's collection
C-1	5 weight coin scale - no label, LM (with dot over the L) maker's mark on one weight; author's collection
C-2	Large coin scale - maker on label: Johannes Linderman; author's collection
C-3	Large coin scale - maker on label: Johannes Linderman; Diana Crawford-Hitchins collection
C-4	Large coin scale - maker on label: Johannes Linderman; Joe Lenorovitz collection

There are many different ways to examine comparatively the characteristics of these scales. I've chosen to work from the outside to the center: start by an examination of the boxes containing the scales and weights, then the scales and the weights, and finally, the beautiful labels. The labels provide the starting point for conveying the information that I have found about the makers themselves.

The Boxes

The boxes were made out of a single block of wood. The corners were cut at a forty five degree angle, (Figure 4) presumably because it was fashionable, or to reduce being damaged or to make it easier to slide the box in or out of a pocket. In one box, the corners are square. (Figure 5) For that scale the box lid is the same size as the label. (Figure 6) Presumably, to avoid having to cut the label, they left the box corners square.

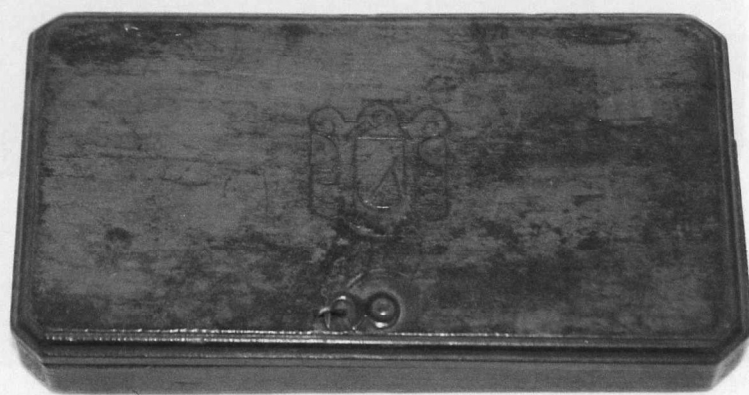


Figure 4. ▲▲ Box for D-4 with diagonal corners.



Figure 5. ◀◀ Box for D-3 with square corners.

Figure 6 ◀◀ Box lid for D-3 fits the label exactly.



Dimensions

Table 2- Dimensions of Scale Boxes

Scale Identifier	Width (cm)	Depth (cm)	Height (cm)	Corner
D-1	12.5	6	2.3	diagonal
D-2	15.5	8.4	2.5	diagonal
D-3	10.2	5.3	2.3	square
D-4	15.5 ²	8.4	2.5	diagonal
D-5	13.5	6.8	2.7	diagonal
C-1	11.5	6	2.3	diagonal
C-2	13	6.8	3.2	diagonal
C-3	15	8.5	3.2 ³	diagonal
C-4	13.5 (5 ³ / ₈ ")	6.3 (2 ¹ / ₂ ")	3.1 (1 ¹ / ₄ ")	diagonal

Wood Used

Most of the scale boxes are very dark so it is difficult to identify the wood. It is a hardwood, with small grain which would be easy to carve cleanly for the beam and weight compartments. Either fruitwood or mahogany would likely have been used. It appears that the lids were cut from the same block of wood.

Decoration on lid

The outside of the lid of the diamond scales contains a carved design which is typical for scales made in Amsterdam⁴. (Figure 7) There are slight variations of the design, but no apparent correlation with the maker. The outside of the lid of the coin scales C-2 and C-3 have three floral patterns and small geometric patterns within an elaborately designed scroll surrounding them, all stamped in the lid. (Figure 8) The lid of the Linderman coin scale in the ISASC collection has the same decoration on it. (Figure 9) As Joe

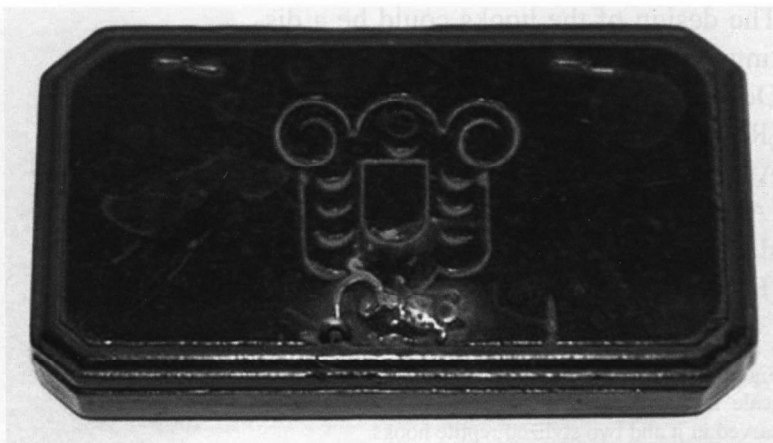


Figure 7. ▲▲ Lid of coin scale C-1 showing the carved design used with Amsterdam made scales and a single tortoise hook.



Figure 8. ▲▲ Outside of the lid of Johannes Linderman coin scale C-2.

Figure 9. ►► Lid of the Linderman coin scale in the ISASC collection. (Picture courtesy of Jan Berning.)



Figure 10. ▼▼ Lid of C-4 showing single tortoise hook and Amsterdam coat of arms in the center.



Hooks (number and design)

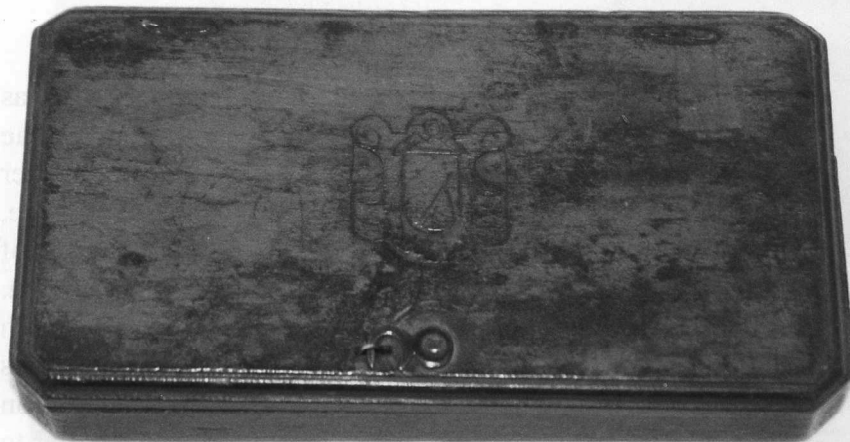
The lids are fastened to the base with wire hinges and held closed with one or two hooks. The hooks are in the shape of a tortoise or other stylized reptile. (Figure 11) In one case, just an arching hook is used. (Figure 12)

The design of the hooks could be a distinguishing feature. As depicted in the October 2007, issue of *Das Fenster*⁵ (Reference 1), page 17, J.A. (Johannes Adries) Groengraft of Amsterdam (Abraham's father) used the dolphin shape hook on a scale he made in 1700. (Figure 13)

Figure 11. >> Lid of Abraham Groengraft diamond scale D-5 with the typical Amsterdam made design carved in it and two stylized reptile hooks.



Figure 12. << Sample of arched hook and Amsterdam made design on the lid of diamond scale D-2.



Amsterdam, J. A. Groengraft vor 1700. Delphinform
Figure 13. ▲▲ Dolphin form hook of AJ Groengraft.

Figure 14. ▼▼ Red velvet lining of Abraham Groengraft diamond scale D-5.

Material lining the case

The carved out sections of the boxes for holding the beam and pans are lined with different kinds of material probably from scraps that the maker had on hand. Abraham Groengraft used red velvet for his scale. (Figure 14) For D-1 Linderman used a heavy brocade type material, probably silk, with yellow diamond pattern lining. (Figure 15) For D-2 he used a beige and brown flower pat-

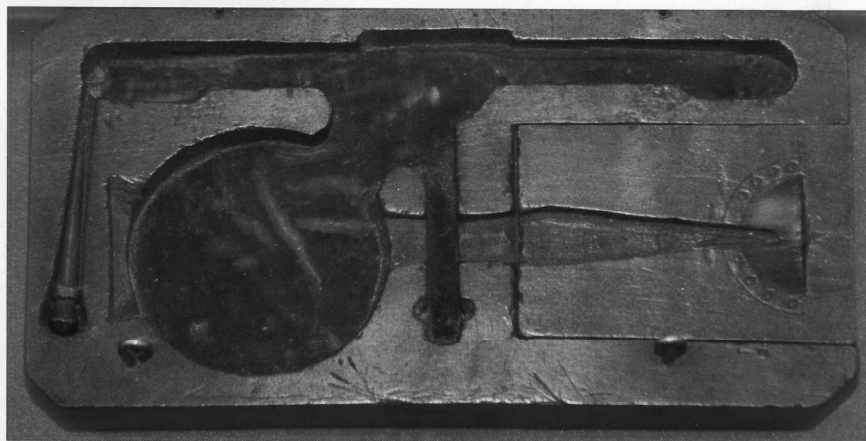


Figure 15. ▲▲ Yellow brocade lining of Linderman diamond scale D-1.

terned cloth, possibly from a piece of wall covering (Figure 16) and for D-3 he used beige and blue patterned heavy weight cloth, probably silk. (Figure 17) The lining for D-4 appears to be blue paper or a light weight blue cloth. (Figure 18) The large coin scale C-2 is lined with dark brown or gray velvet. (Figure 19) C-4 is lined with a blue fabric. (Figure 20) The ISASC Linderman coin scale has pale green velvet material. (Figure 21)



Figure 16. ▲▲ Brown and beige lining of Linderman diamond scale D-2.

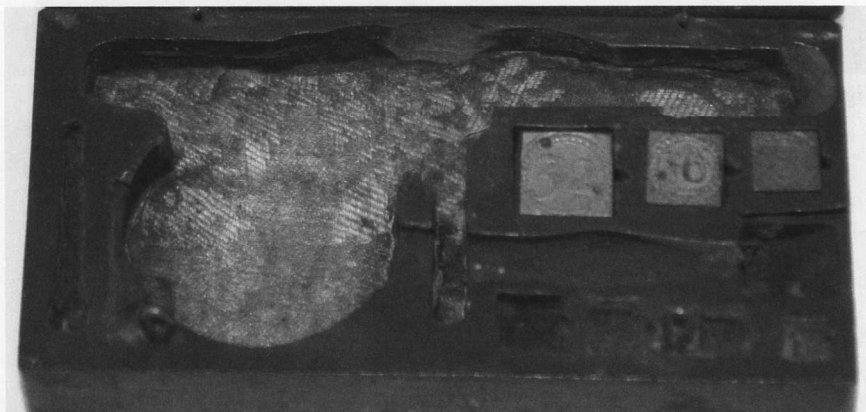


Figure 17. ▲▲ Blue and beige lining of Linderman diamond scale D-3.

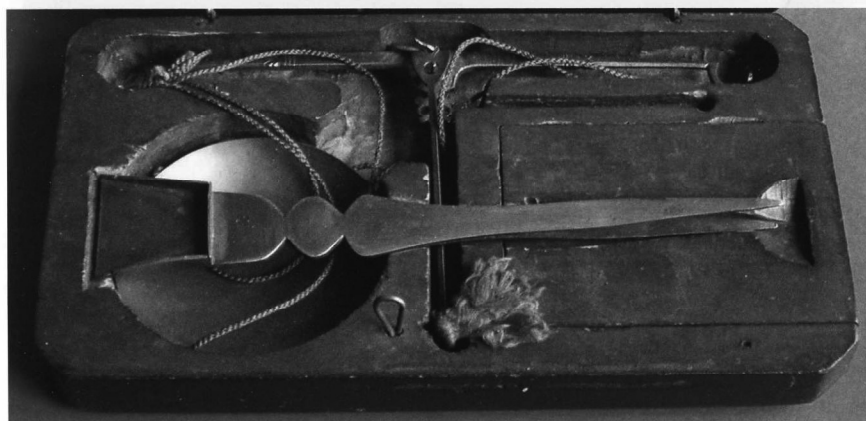


Figure 18. ▲▲ Blue lining of Linderman diamond scale D-4.



Figure 19. ▲▲ Dark brown velvet lining of Linderman coin scale C-2.



Figure 20. ▲▲ Blue fabric lining of Linderman coin scale C-4.

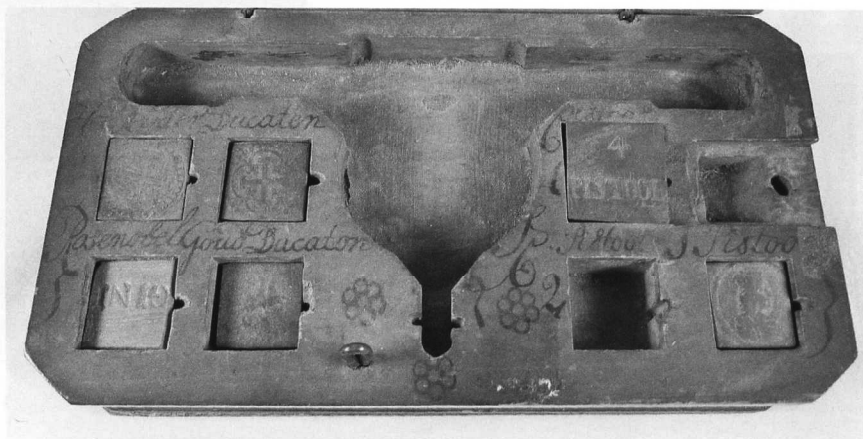


Figure 21. ▲▲ Green cloth lining of Linderman coin scale in the ISASC collection.

Concluding Remark

Nothing about the cases, the hooks or the lining helps with dating and attributing Jan Linderman scales. Subsequent parts of this article will continue the examination of other features and, along with the family history, use them to help determine each scale's time period and maker.

Notes and References:

1. Several years ago, I came across an auction in which one of the lots was a pearl sieve and on the top was inscribed LINDERMAN. Unlike diamonds, pearls are sold by size (diameter) not by weight.
2. Estimate based on the pictures and similarity of the scale with D-2.
3. Estimate based on its similarity to C-2.
4. Email from Jaap Visser July 24, 2009.
5. *Das Fenster in de Kreissparkasse, Koln* – Theme 171 October 2007.

Acknowledgements:

At this time, I would like to acknowledge the contributions of several people to the success of this project and particularly to this part of the article. Diana Crawforth-Hitchins and Ritzo Holtman provided the inspiration and a lot of information about the Linderman family to get me started. Joe Lenorovitz enthusiastically shared the information about his scale with me when I started the project. Hopefully, he would have been pleased with the result and with what we learned about the scale and its maker.

Editor's Note:

This is the first part of an extensive article on the coin and diamond scales made by the Dutch family Linderman. The author is interested in any additions that any member may have to his vast store of knowledge on this family or their scales. Additional parts of this article will appear in upcoming issues of EQM.

Verification Marks on a South African Avery Vibrating Counter Scale

BY MALCOLM MATHIAS



These Avery Vibrating Counter scales were used in a South African Pharmacy from 1916 to 1976 before being brought to Australia by the Pharmacist, who retired in Australia. They were subsequently purchased at an Antique Market in Canterbury, Victoria, Australia.

A British Avery catalogue lists this type of scale as **Vibrating Counter Scale No. 641:** *For Confectioners, etc. In polished walnut box, with hardened steel knife-edges and bearings (Béranger's principle). Fitted with various types of goods pans. The scale pans rest upon four supports. Prices do not include weights.*

To weigh	2 lb	4 lb	10 lb
Two Round Brass Pans	126/-	129/-	138/-
One Round Pan and One Scoop	126/-	135/-	159/-
J1 Brass, Copperna with Iron Weight Plate	126/-	132/-	150/-
K Brass, Copper, or Enamel, with Iron Weight Plate	120/-	126/-	141/-
M China, with Iron Weight Plate	120/-	126/-	141/-
Marble Top extra	18/-	21/-	27/-

NB: Prices from British Avery Catalogue - South African prices may be different.

The brass weights acquired with the scales, when purchased in Australia, (Aug 13, 2011) include (left to right) 1 kg, 2 x 500g, 2 x 200g, 2 x 100g, 2 x 50g, 2 x 20g, 2 x 10g, 2 x 5g, 2 x 2g and 2 x 1g. Only the 1 kg weight is labelled Avery – this weight and the similar 500g weight are a bronze colour, the rest are the more normal brass colour.

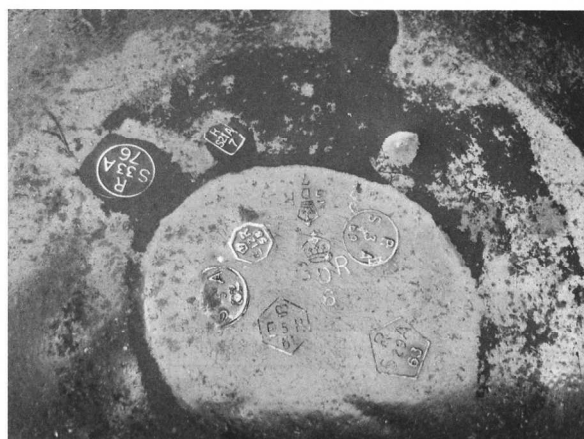
The front walnut panel of the scales has the words **W. & T. AVERY LD BIRMINGHAM** embossed in gold leaf on the left-hand side, and the words **JOHANNESBURG CAPE TOWN & DURBAN** embossed in gold leaf on the right-hand side.

The round brass indicator window reveals the words **TO WEIGH 4 lb** imprinted on the plate behind the two red indicator arrows.



Verification Marks

The British and South African authorities checked the accuracy of these scales between 1916 and 1976. Both the walnut box and the brass pans of the scales have been stamped with annual verification punch marks that show the reigning British Monarch or the RSA Authority and the year. The punch marks are in random order (i.e. not chronological) across the top front edge of the walnut box, and also in the bowls of both brass pans.



The table below should only be considered a “best guess” of which verification marks belong to which year. Monarchy and double digit years such as RSA 69 seem obvious, but single digit years may be incorrect – RSA 7 is listed below as RSA 1970, but it could be RSA 1967.

Year	Location of Marks	Verification Mark	Extra Mark	Year Mark	Design
1916	Pan L & R	GDR		6	crown
1917	Pan L & R	GDR		7	crown
1919	Pan R	GDR		9	crown
1920	Box	GDR		0	crown
1922	Box	GDR		2	six sides
1923	Box	GDR		3	six sides
1924	Box	GDR		4	eight sides
1925	Box	GDR		5	crown
1927	Box	GDR		7	crown
1928	Box	GDR		8	small vert oval
1929	Box	GDR		9	crown
1931	Box	GR	0	1	small diamond
1932	Box	GR		2	small diamond
1934	Box	GR		4	eight sides
1935	Box	GR	10	5	small circular
1936	Box	GHR		6	diamond
1937	Box	GR		7	small circular
1938	Box	GR	12	8	small vert oval
1940	Box	GR	37	0	small six sides
1941	Box	GR		1	small vert oval
1943	Box	GR		3	small diamond
1944	Box	GR		4	small eight sides
1945	Box	GR	21	5	small vert oval
1946	Box	GR	12	6	small vert oval
1947	Box	GR	72	7	six sides
1948	Box	GR	21	48	circular
1949	Box	GR	21	49	five sides
1950	Box	GR	21	50	diamond
1951	Box	GR	12	51	eight sides
1952	Box	GR	30	52	vert oval
1953	Box	ER	30	53	square oval
1954	Box	ER		54	small six sides
1958	Box & Pans L & R	ER	12	58	small eight sides
1959	Box	ER	29	59	vert oval
1960	Box	ER	5	60	vert squared oval
1961	Box & Pans L & R	ER	5	61	six sides
1962	Box & Pans L & R	RSA	5	62	circular
1963	Box & Pans L & R	RSA	23	63	five sides
1964	Box	RSA		64	diamond
1969	Box & Pans L & R	RSA	3	69	circular
1970	Box & Pans L & R	RSA	21	7	small vert rectangle
1973	Box & Pans L & R	RSA	37	73	small vert oval
1976	Box & Pans L & R	RSA	33	76	circular

About the Author:

Malcolm Mathias is a new ISASC(E) member from Australia.

Sweet Mystery

BY JOHN KNIGHTS

The article in EQM 2014, issue 3, by Ben Smith, concerning advertising scales reminded me of a similar instrument once distributed within the United Kingdom. Back in the mid-19th century Thomas Frye and Edward Smith of Nelson in Lancashire devised a confection designed to ease the symptoms of the common cold and generally combat the miserable effects of the British winter.

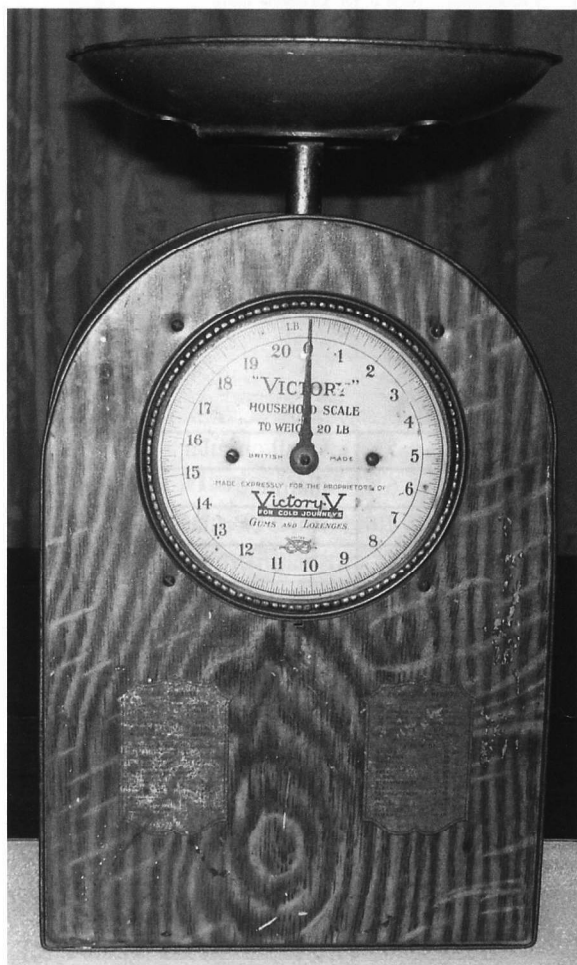


Figure 1. ▲▲ The Victory V advertizing scale.

every conceivable opportunity with appropriate hand gestures accompanying the Vee bits. No wonder it sticks in my mind all these years later.

Victory V's were available both as hard brown lozenges and soft black gums and they both delivered quite a hit when placed in the mouth and the noxious vapours soon cleared the sinuses. It is rumoured that sweet shops rationed them to $\frac{1}{4}$ pound per customer because of their potential soporific effects, but I don't recall any such limit being imposed in my part of the world where they were readily available to buyers of all ages.

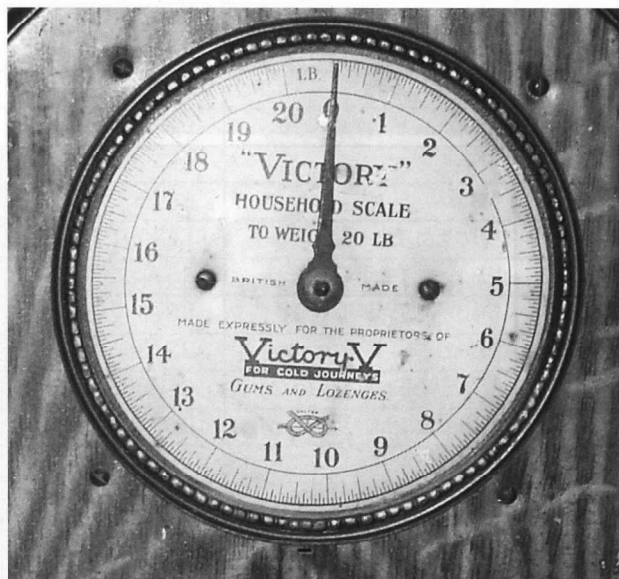
Figure 2. ➤➤ The dial notes that it is a househould scale to weigh 20 pounds.

The Victory V was a somewhat virulent confection characterised by the flavours of linseed and liquorice but which also contained ether and chloroform. These are powerful substances with anaesthetic properties and which are now considered, potentially, injurious to health if ingested. The use of such ingredients was typical of Victorian specifics but the chloroform and ether did remain in the sweets well into more recent times. The original 19th century product also contained chlorodyne, a laudanum like concoction containing opium, but this was probably removed in the early 20th century when the product name was changed from Victory Chlorodyne Lozenges to Victory V.

They were widely advertised in the press and on commercial television in the 1950's and 1960's and there was an advertising jingle, part of which still sticks in my mind.

It's Victory V weather again! Victory V weather again! Victory V, V weather again!

The repeated utterance of the word 'Vee' was a source of ribald amusement to spotty schoolboys of my generation. As some of you may recall, the so called 'V sign'; performed with the first two fingers (the so called 'reverse Churchill'); was a regular weapon in the juvenile arsenal of mutual insult (nowadays largely replaced by the rather more offensive raised middle finger, I believe). Thus the Victory V jingle was joyfully sung at



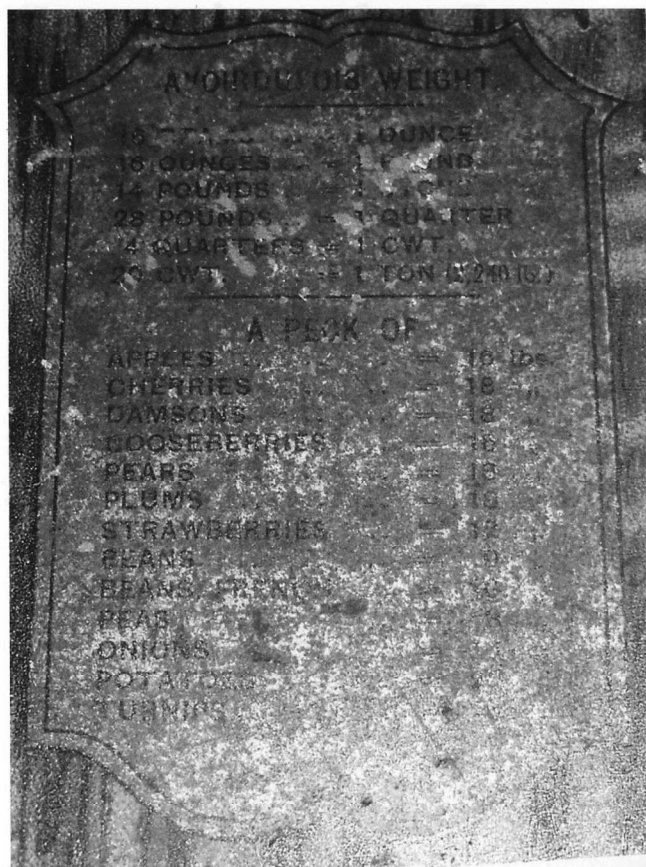


Fig. 3. <<

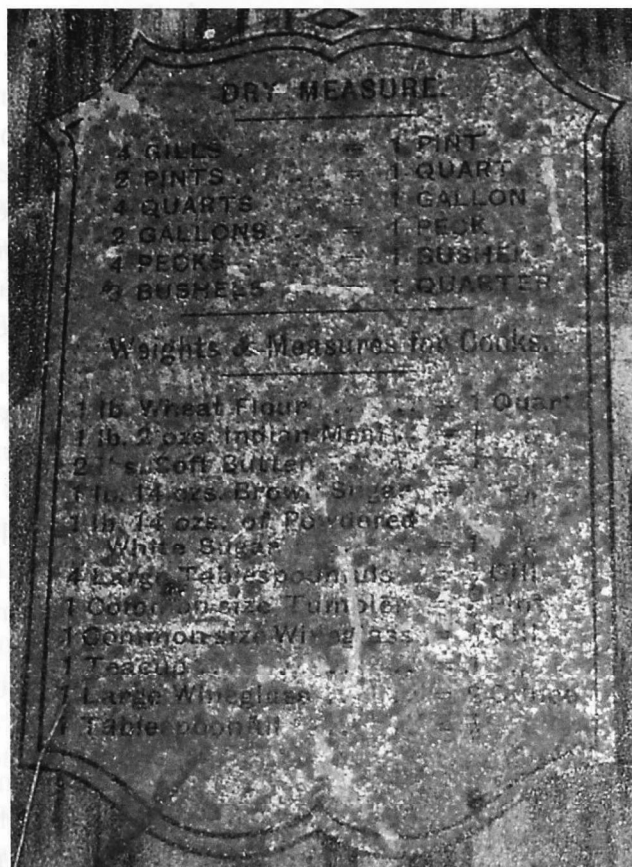


Fig. 4. >>

A watered down version of the product, minus any anaesthetic or hallucinatory ingredients but retaining a similar taste to the original, still survives as part of a range of medicated confectionary made by a company in Crediton, Devon.

The Victory V scale is a pedestal type spring balance (Fig. 1) contained in a tin plate box lithographed with a wood effect coating. At first sight the machine is a bit of a mystery. It is a domestic instrument (Fig. 2) made for household use rather than a trade instrument as might be expected were it aimed at retailers of the confectionary.

The box containing the scale is embellished with certain inscriptions. On the front are two panels (Figs. 3 & 4) which contain information about weights and measures for cooks and weight /volume equivalents for various basic foodstuffs.

Figure 5. >> Information about the Victory V products is on the back of the scale.





Figure 6. ▲▲ One of the period advertisements for Victory V Gums & lozenges.

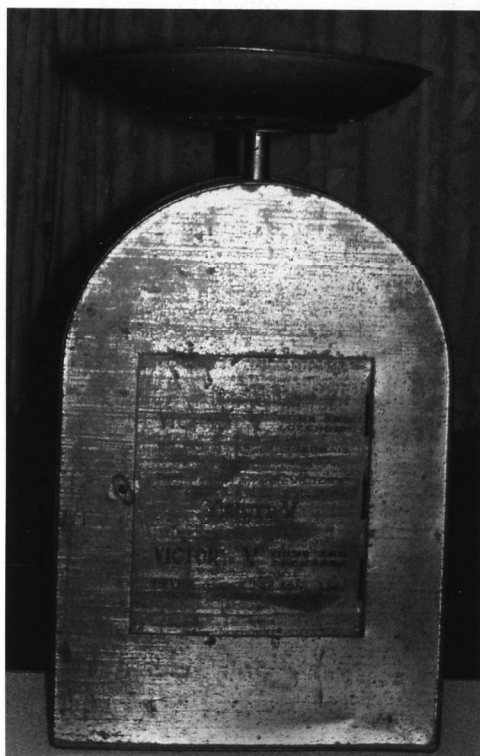


Figure 7. ▲▲ The door in the back of the scale permits space for product storage as well as access to the scale mechanism.

On the rear there is information about the Victory V product itself (Fig.5), warning people to be aware of inferior imitations and making general recommendations about these sweets which are described as being *for cold journeys*. Judging by advertisements from the early 1950's (Fig.6) the *for cold journeys* statement was used as a regular recommendation for the product which probably says much about the British climate and the state of public transport at that time. The inscription on the rear does also, to an extent, solve the mystery of this peculiar instrument.

At the top of the general hype and advertising material there is the statement, *THIS CONTAINER IS ISSUED FOR OUR WORLD FAMOUS VICTORY V GUMS AND LOZENGES (AND A FEW OTHER LINES)* suggesting that the scale was a receptacle for holding the sweets. The little door in the back (Fig.7) permits access to the interior of the box and the spring mechanism for the scale, made by the well known Salter Company, is contained within a secondary casing fixed to the front of the box so its working would not be interfered with if product were placed inside.

The inference seems to be that this item stood on a shop counter as a receptacle for Victory V products. The confectionary would, presumably, be in pre-packs so would not need weighing out to the customer. As the scale only has one dial facing away from the shopkeeper, it would not be a practical scale for weighing up the product, even if it were a trade approved device.

The question remains however, why was the receptacle made in the form of a kitchen scale?

In fact it transpires that the manufacturer produced a wide range of novelty containers for displaying their products, some of which contained working components. Examples of clock cases, containing a functional timepiece are known to exist as well as the kitchen scale so the working component was probably more of a

novelty feature than the prime purpose of the container. Some of the other Victory V containers are formed as classical urns and other interesting shapes with quite exotic art work.

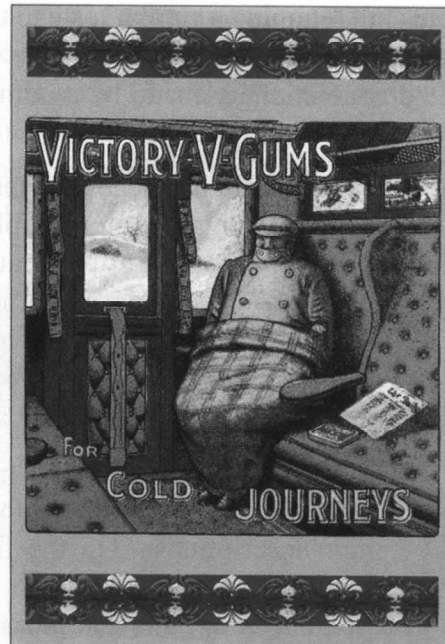


Figure 8. ▲▲ An advertising post card was also used to tout the use of Victory V Gums *for Cold Journeys*.

Scanning the Jenemann Archive

BY THOMAS ALLGEIER

AND RITZO HOLTMAN

Those who have been ISASC members for many years may remember Hans R. Jenemann (1920-1996) who probably has contributed more to research into the history of balances, weighing and much beyond than any other individual.

Apart from several articles for EQM he has published, extensively, on the subjects of balance development, balance makers, history of weighing and others across three decades of the last century. In so doing he collected an enormous amount of information in many formats: books, catalogues, pamphlets and many other types of written information, as well as many thousand photographs – again in several formats. All of the latter he took himself, either by photographing the original item *in situ*, or by taking a photographic reproduction of printed material.

He was also an avid collector of antique and historic balances, especially analytical/chemical and microbalances.

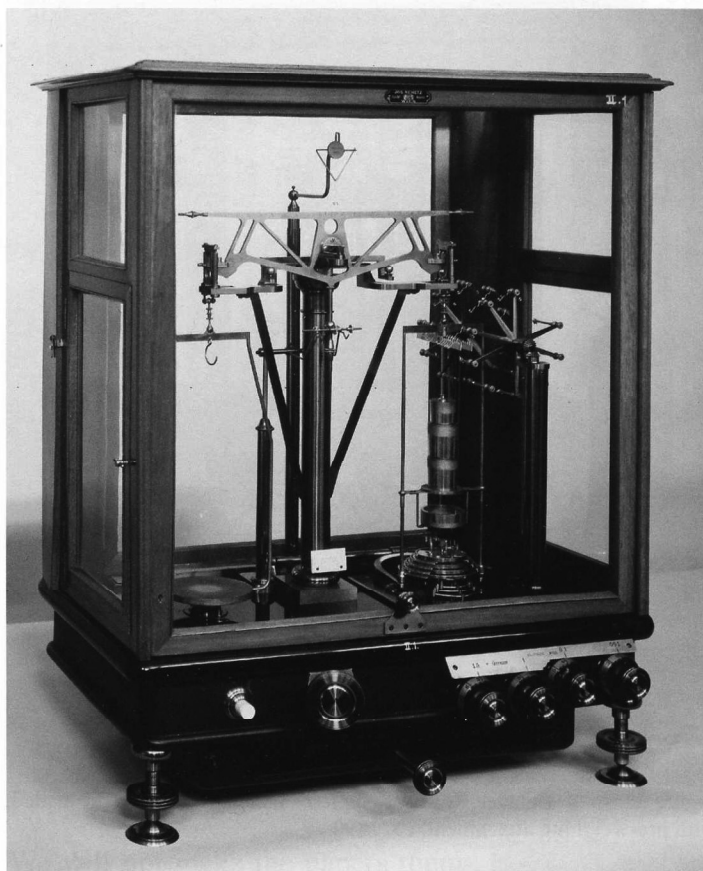


Figure 1. ▲▲ Balance by Josef Nemetz, Vienna. Partially weight-loaded using “carousel” and stack weights, 1894.

After his death and the death of his wife in 2008 several individuals have conspired to finding homes for the material that we now call the Jenemann Archive. The balances were sold to private and company museums in part while he was still alive, and the remainder after his death.

It was not so easy to re-house the archive material, but we understand that most of the books and other writings he collected are now at the Philipp-Matthäus-Hahn Museum in Albstadt-Onstmettingen, Germany. The Riedschule collection in the same town holds many of his balances, too.

On his death a number of projects were left unfinished, including his magnum opus, on the history of balance makers in central Europe.

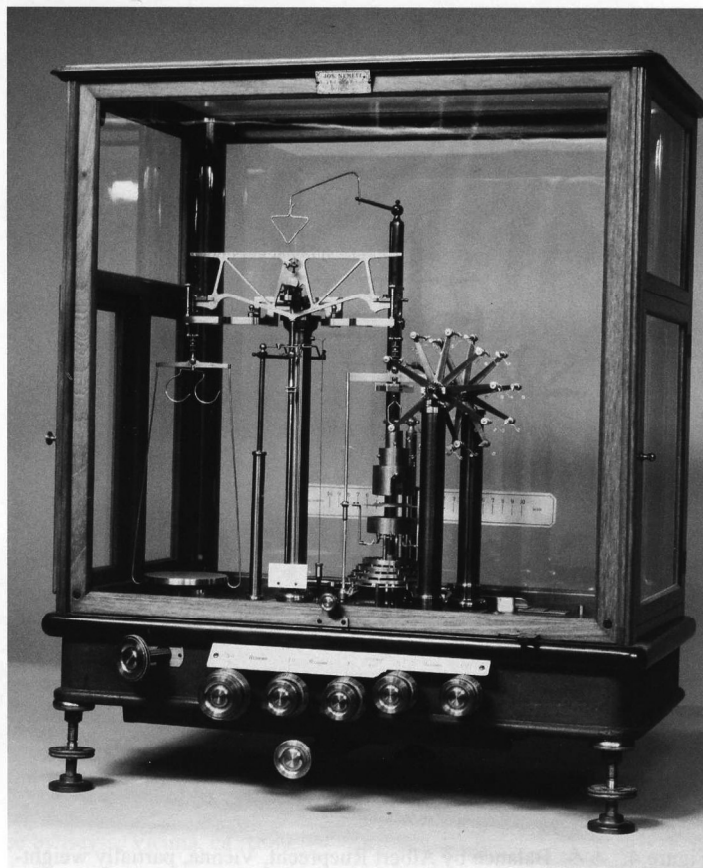


Figure 2. ➤➤ Balance by Josef Nemetz, Vienna. Fully weight-loaded using “carousel” and stack weights, ca. 1890.

Some of the material he had gathered for these projects passed into the hands of a former co-conspirator, Erich Robens. With Susanne Kiefer and Shanath Jayaweera he compiled his excellent and very large volume "Balances" as reviewed by Ritzo in EQM edition 2/2014.

You can see what we are leading on to: What happened to the photographic material? The answer is that Erich Robens and Susanne Kiefer, who were custodians of the remainders of the Archive, passed all this on to us.

And we have started to bring what we were given into the 21st century by making it computer-readable.

This means scanning of several thousand 35 mm slides, several more thousand 6 x 6 cm slides and negatives, several more thousand 6 x 7 cm and 9 x 12 cm slides and negatives, as well as many hundred pages of written information that accompanied the images.

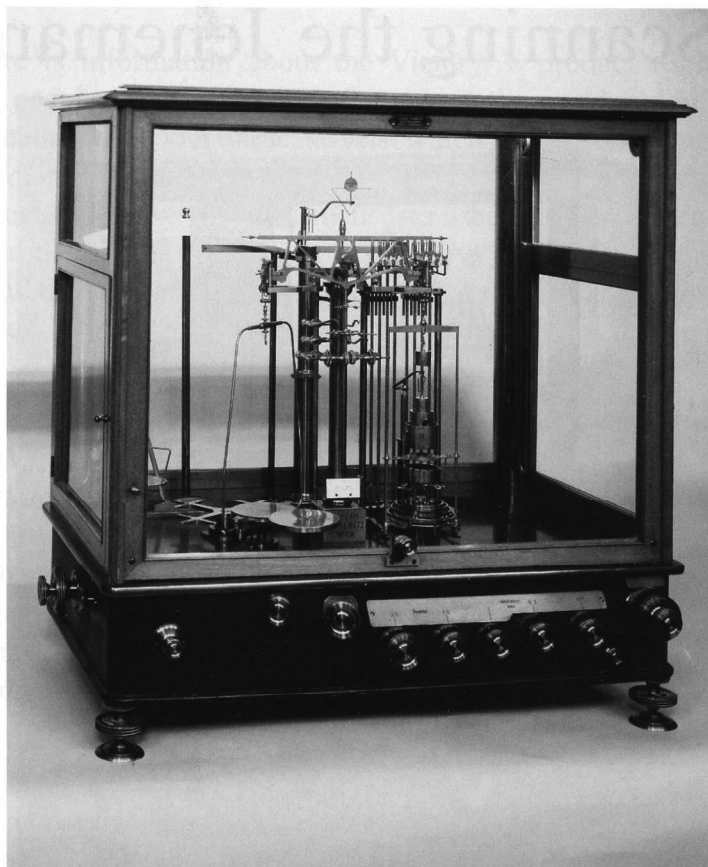


Figure 3. ▲▲ Balance by Josef Nemetz, Vienna. Fully weight-loaded, with pre-weighing attachment, ca. 1890.

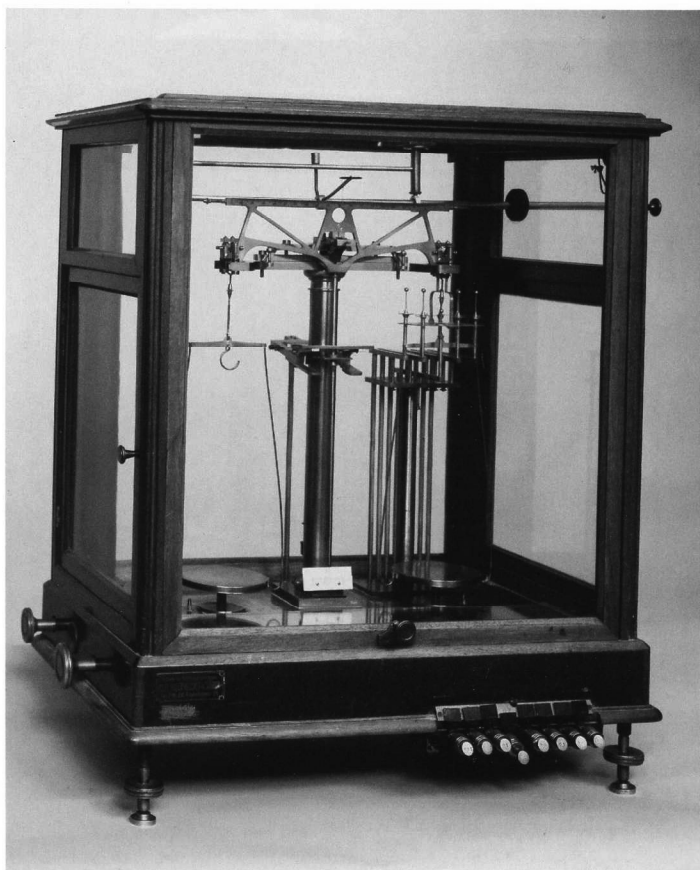


Figure 4. ▲▲ Balance by Albert Rueprecht, Vienna, partially weight-loaded using push-buttons, ca. 1890.

Of the images, what we have done so far is about 50% of the 35 mm slides, together with index lists which let one find / identify what one is looking for.

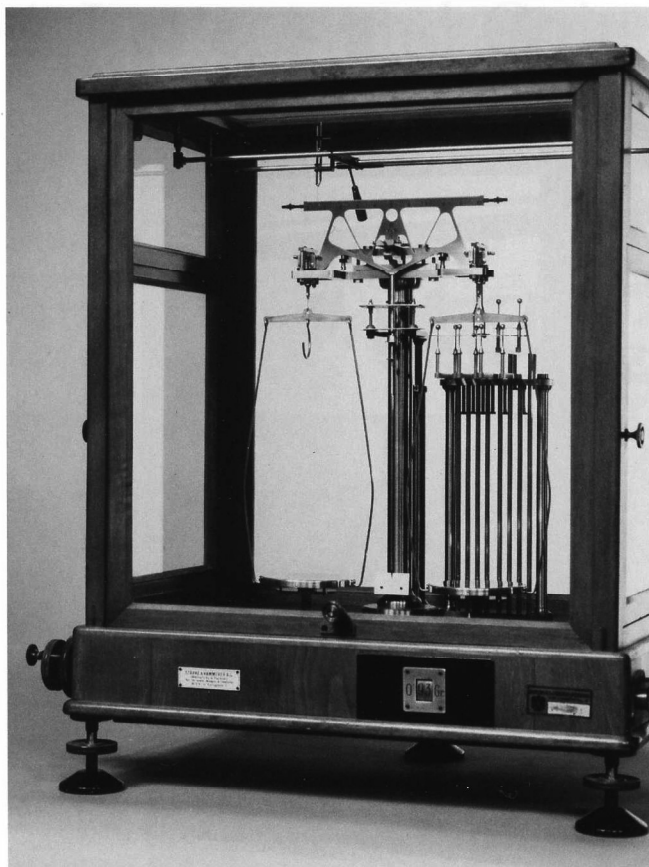
Most of the written documents have also been scanned already.

And a very small selection of the large-format "slides" which as one would imagine provide superb quality and definition, so much so that we thought you would like to see some – see Figures 1 to 7.

We should also add that over a period of years Ritzo had already compiled a significant amount of the published papers of Hans Jenemann, and scanned them for posterity.

We have taken the liberty of registering the domain www.jenemann.org on which you can see a few more pictures as well as a short write-up of what we eventually intend to achieve:

A searchable archive of images and documents, taken/written by Hans Jenemann, or connected to his researches in some way.



While this may seem as an almost unmanageable task it is clear to us that it is worth the effort:

You must appreciate that Hans Jenemann went to extraordinary lengths to acquire some of these images: He used in parts a Linhof large-format camera and much auxiliary equipment, and after some trials had more or less perfected the art of taking pictures of antique balances.

Picture the scene: The man drives from his home in Mainz to a monastery in Kremsmünster (Austria), unloads a car-boot full of professional photographic kit, sets it all up and patiently proceeds to take pictures of the earliest known precision balances of Florenz, Krusche, Ekling, Seyss, Rueprecht and Nemetz for posterity and research.

We could not bring ourselves to let these treasures slumber unnoticed. When finished this will be the largest computerised image database of balance-related material of all times, anywhere in the known universe!

Figure 5. << Balance by Starke & Kammerer, Vienna, partially weight-loaded using rotating knobs and "digital" display, ca. 1924.

We will not make the papers themselves downloadable (to avoid copyright infringements), but indicate which we have and that we are prepared to share them with known individuals on a non-commercial basis for the purposes of research and access to detail information. Similarly we will not upload high-resolution images, but again would make them individually available to persons who have a genuine interest.

We may also, as we progress through the task, insert a few images into these pages from time to time for your enjoyment - watch this space!

In so doing we feel we perform a very useful social function: More people have walked on the moon than have so far been able to view this collection of pictures in their entirety.



Figure 6. ^^^ Balance by Seyss, Vienna, ca. 1880.

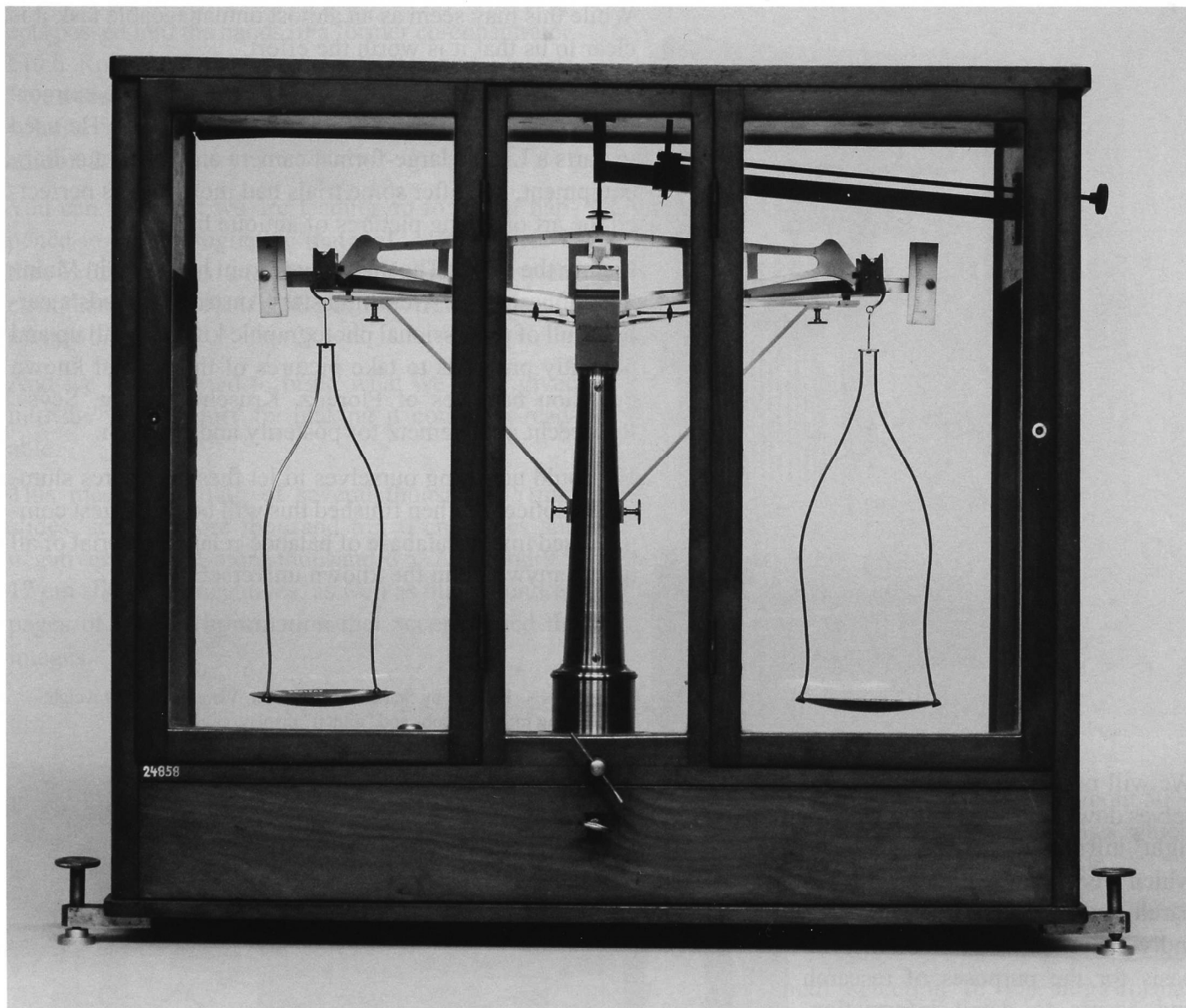


Figure 7. ▲▲ Balance by Moritz Meyerstein, Göttingen, ca. 1850.

The balance collection of Hans Jenemann was dispersed after his death and is also not viewable in its entirety. If you wanted to have a look at this all it would take you years and years of travelling around the world (mostly Germany actually) and trying to gain access to some storerooms at balance manufacturers and chemical institutes. So to save you all of this time, our project will allow you to browse the great man's legacy in the virtual world from your armchair.

It also should convey some sense of discovery: When I saw those pictures for the first time, I knew how Carter and Lord Carnarvon must have felt when they peered into King Tut's tomb 3,000 years after it was sealed. We sincerely hope that people who eventually click through the website (once finished of course) get a similar sense of discovering a lost treasure.

Anybody wishing to contribute with material, donations (the website is advertising-free hence the hosting costs money!) and any other support should contact the authors.

A Letter - and Coin Scale

BY REIN KOK

When you are surfing the internet you sometimes unexpectedly find strange things. The other day I saw a small French scale. It was circular and had three spokes. It was used on both sides. One side had one pointer, the reverse had two pointers. The side with one pointer caused no problems : it's a letter scale. At the lower arch is a counter poise. It's made up of two thin metal plates riveted at a projection of the circle. The graduation is up to 15 grams (fig.1). Between the numbers 5 and 10 is the number 25c (= centimes). During 1871 - 1876 the rate of a letter up to 10 grams was 25 centimes.



Figure 1. ▲▲ The letter scale.



Figure 2. ▲▲ The coin scale.

The reverse gives more problems (fig.2). On one of the spokes is the word ARGENT (=silver) and the end of another spoke the word OR (=gold). Both pointers show a graduation beginning with O (zero). So I thought it was a graduation for weighting coins. The graduation near the counterpoise was strange : between $\frac{1}{2}$ and 1 was the abbreviation "FR" (=franc). Later on I realised this graduation was not for weighing. At the lower arch, the silver French coins of $\frac{1}{2}$ - 1 - 2 and 5 francs are mentioned and at the upper arch the French gold coins of 5-10-20-40 and 50 francs. These numbers were to control the silver and gold coins. Some doubts had risen about the authenticity of the coin. You put the coin in the clasp and the pointer shows you the number of the value of the coin on the graduation. Counterfeiting is timeless, so this small scale is a kind of CCD. It would not have been very accurate. The maker of this scale was R.A. This name is unknown to me. The diameter of the circle is 4 cm.

Collecting Ephemera Related to Personal Weighing Machines – 1

BY NORMAN BIGGS

Many of us avoid collecting some types of scales simply because we do not have enough space to store them, let alone put them on display. Personal weighing machines come into this category. Fortunately there is an alternative means of studying these objects, which involves less space—and less harm to the finances. In this series of articles I shall describe some of the ephemera associated with personal weighing machines, and try to show how the ephemera can provide useful information about the machines.

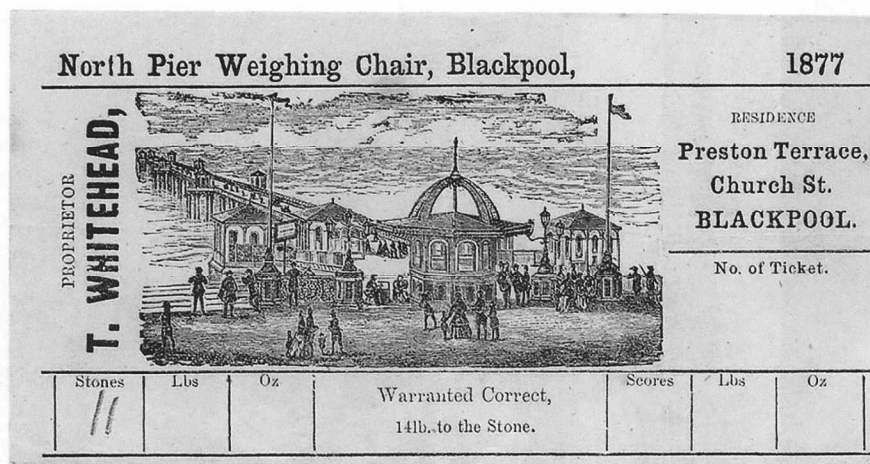


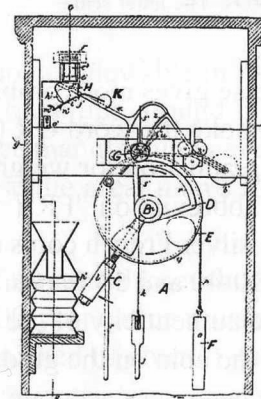
Figure 1. ▲▲ Hand-written weight-ticket, 1877.

The weighing chair required the presence of an operator to collect the fee, arrange the balance weights and (in this case) write the result on the ticket. But it was not long before advances in engineering design led to the replacement of the human operator by mechanical devices. One of the first UK patents for an automatic weighing machine was granted to Percival Everitt in 1884 (Figure 2). As can be seen, there were two significant features. The machine was 'coin-freed'—that is, it was operated by inserting a coin—and the result was recorded on a printed ticket.

16,433. Everitt, P. Dec. 13.

Pendulum-weight apparatus; indicating-mechanism; printing-devices.—The machine is arranged so that the weight of a body is indicated only when a coin has been inserted in a slit for the purpose; a printing-device may also be added, by which the weight is printed on a ticket, this ticket being drawn out in a drawer which is released by the weight of the coin. The body to be weighed is placed on a platform as ordinarily used. This is supported by the riband A, which is attached to the shaft B. On this shaft are mounted the weighted arm C, the quadrant D, and the disc E, round which passes the cord of the counterpoise F. The pinion G gears with the quadrant and turns through an angle proportional to the weight. Its spindle carries a flyer to prevent shocks, and a stop against which a finger connected with the indicating-mechanism abuts when a coin is placed in the box H. The weight of the coin overcomes the counterpoise K, and so brings the finger against the stop. The spindle of the index-handle is in a line with

this spindle. On this index-spindle may be mounted a barrel or disc with figured graduations or type, and a tube containing tickets is arranged



above it. The disc is set in position by the weighing-apparatus and the tickets are allowed to fall upon the type by the pulling out of a drawer, this drawer being held by a catch that is only released by the insertion of a coin.

Figure 2. ►► Everitt's UK patent, 1884.

Everitt patented his idea in several countries, and in 1885 he arrived in St Johnsbury, Vermont, USA, the headquarters of the scale makers E. & T. Fairbanks. This firm began producing coin-freed weighing machines shortly afterwards, and similar machines were soon being made in other countries, including Germany, France and the UK. Several articles¹ published in *Equilibrium* in the year 2000 describe some typical machines from this era, such as the Avery Model 761 (Figure 3).



Figure 3. ▲▲ Avery's Model 761 as shown in their 1906 catalogue, and a postcard from 1910 showing a similar machine at Morecambe.

All the personal weighing machines described above were coin-freed, but the incorporation of the other major function suggested by Everitt, the issue of a printed ticket, was pioneered in Germany. It is now known that the firm of Seitz was making coin-freed, ticket-issuing, weighing machines by 1913.² The Great War of 1914-1918 seems to have ended their production, although one was in use in the Netherlands in the early 1920s, and was still working in 2000.³

To the best of my knowledge the revival of this kind of machine occurred in the USA in 1925, as a result of collaboration between the famous Woolworth's stores and a firm known as the Peerless Corporation. Peerless did not make the machines themselves, but they provided the infrastructure to support the supply of tickets and servicing of the machines in the stores.⁴ Woolworth's were also active in the UK, and it was not long before the Peerless operation had crossed the Atlantic. The printed tickets showed the person's weight on one side, and a simple but hopeful message regarding his or her 'Fortune' on the other side (Figure 4). These Fortune cards were also used in other chain stores, including British Home Stores and Marks and Spencer's.

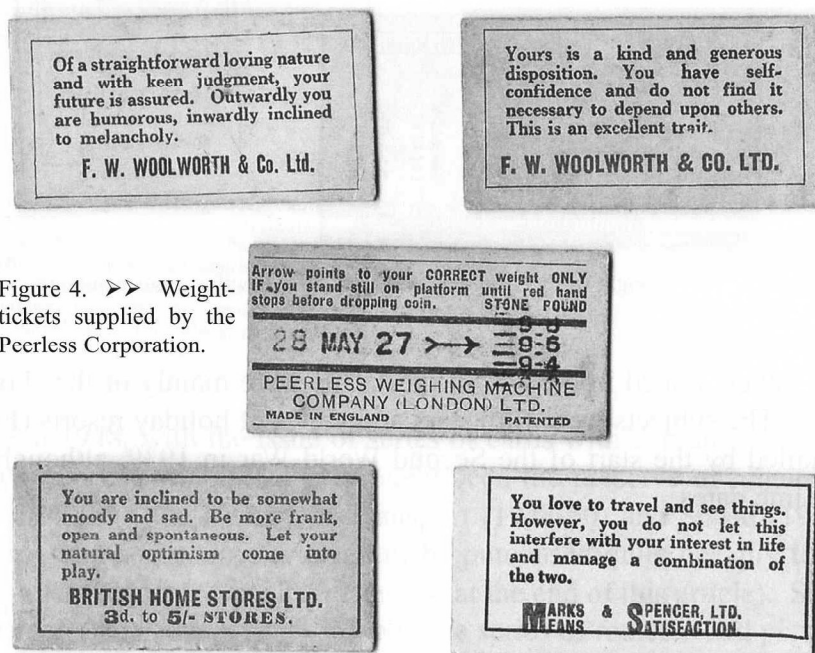


Figure 4. >> Weight-tickets supplied by the Peerless Corporation.

It is almost certain that, as the UK's largest firm of scale makers, W. & T. Avery had been involved in this development from the outset, but the exact details are hard to trace, partly because of Avery's reluctance to reveal the byzantine complexity of its corporate structure. Firms that supplied all kinds of coin-freed vending machines had been set up in the late nineteenth century, and one of them, the Sweetmeat Automatic Delivery Company, had changed its name to the British Automatic Company (BAC) in 1909. In February 1929, 98% of the shares of the BAC had been acquired by the Associated Automatic Machine Company (AAMC), and it became one of a group of companies run by a financier called Clarence Hatry. In July 1929 the Chairman of Avery's told the Annual General Meeting that the AAMC and Avery's had jointly set up a new company, the Soho Automatic Machine Company (SAMC), for the purpose of making weighing machines.⁵ Unfortunately, in September 1929 it was discovered that Clarence Hatry had been using illegal methods to support his financial operations, and the AAMC was involved in a major financial disaster, known as the Hatry crash. The turbulence caused by this event is often cited as a contributory factor in the great Wall Street crash that occurred a month later.⁶ Be that as it may, the outcome was that Avery's obtained control of the BAC and SAMC.

In February 1930, it was stated in the prospectus of the BAC that the firm was in the process of acquiring shares in several other companies that made or supplied automatic weighing machines. Among them were the UK branch of the Peerless Corporation and a Blackpool firm, Snape Hargreaves Limited. The evidence of the printed tickets confirms that these firms were involved in the business of coin-freed ticket-printing machines in the 1930s. Tickets supplied by the Peerless Corporation are fairly common, as are those naming the BAC and the SAMC, but those which bear the name of Snape Hargreaves are scarce. And to add to the confusion, there are some that refer to Avery's explicitly (Figure 5).

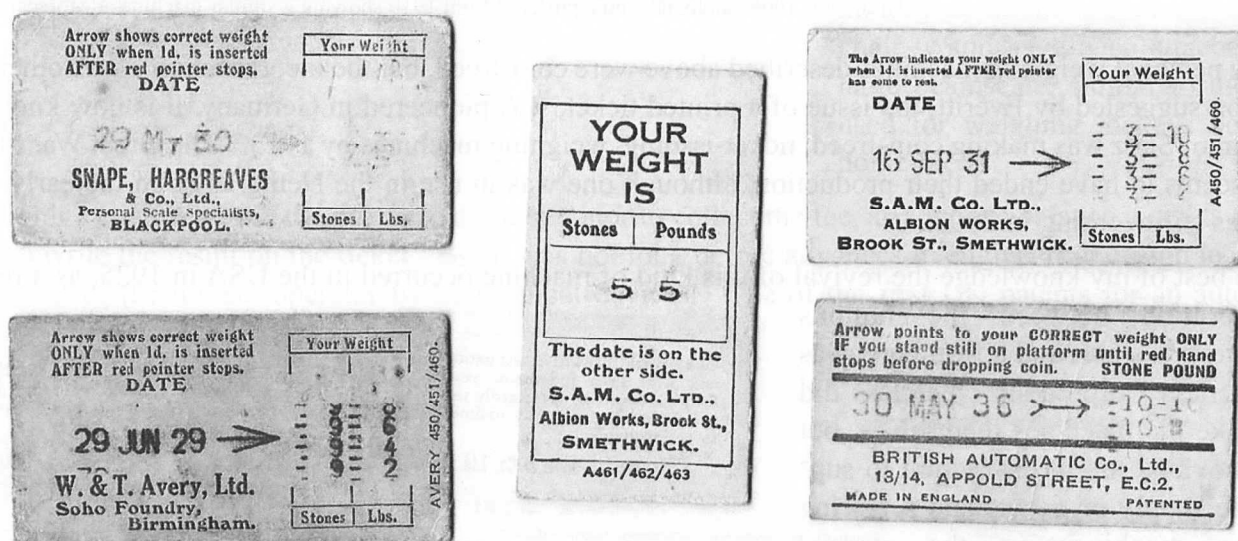


Figure 5. ▲▲ Weight-tickets from the 1920s and 1930s, with various names.

The tickets issued in the UK in the 1930s were mainly of the 'Fortune' type, but there were a few pictorial ones. The subjects were film stars and views of holiday resorts (Figure 6). The ticket business was severely curtailed by the start of the Second World War in 1939, although there are a few very plain cards bearing wartime dates.

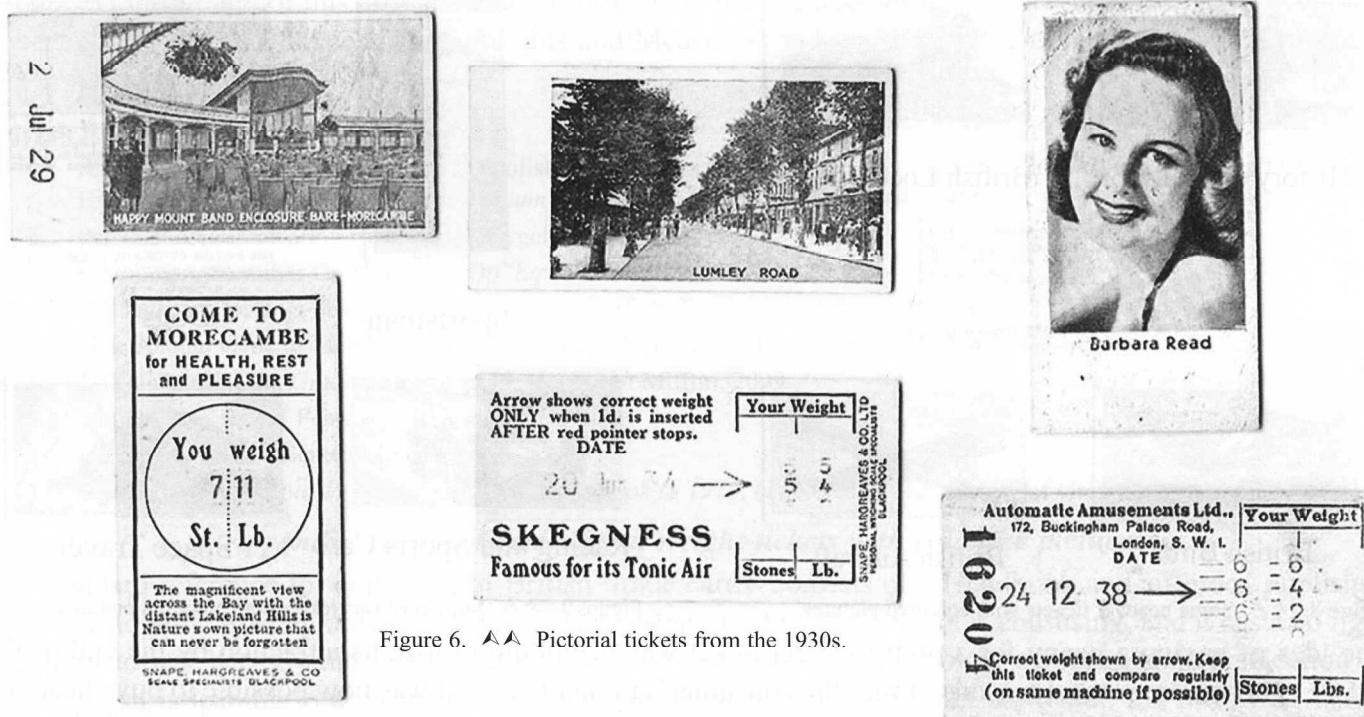


Figure 6. ▲▲ Pictorial tickets from the 1930s.

In Britain the production of weighing tickets was resumed in 1947. From then on, all the cards stated explicitly that they were issued by the British Automatic Company, even though some of them were similar in format to those issued under other names in the 1930s. (In fact the Soho Automatic Machine Company was not wound up until 1953.⁷) The earliest postwar cards carried textual information, and were issued in numbered series to encourage collectors. For example, there was a series of Twenty Questions, a series of 44 (awful) Jokes, and another series of 44 issued in 1953 entitled Coronation Information (Figure 7).

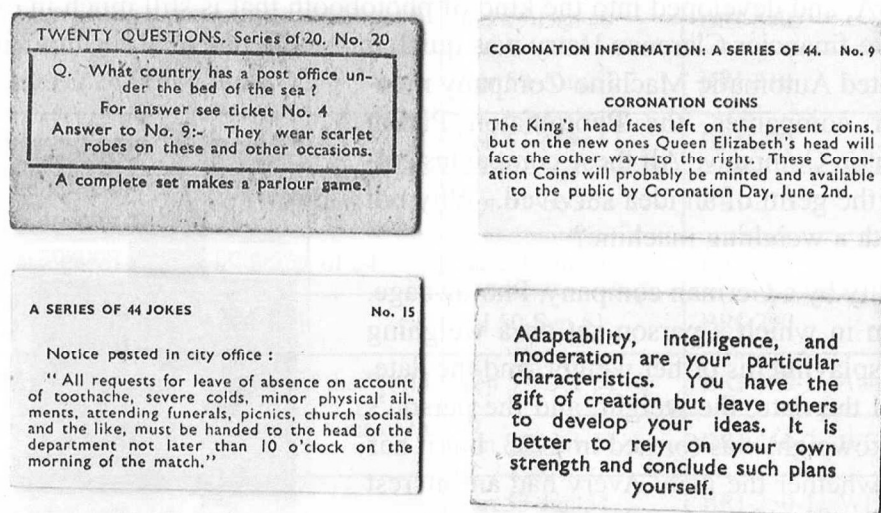


Figure 7. ◀◀ Postwar tickets with text only.

The most significant innovation took place in 1948, with the issue of series of cards with coloured pictures. These cards clearly tapped into a collectors' market, which had previously been the preserve of 'cigarette' cards. The series of British Locomotives (1948-51), the History of Transport (1948-50) and Speed (1949), were obviously very popular with collectors, and complete sets can still be purchased quite cheaply today (Figure 8). About 16 series of coloured pictures were issued in all (see the list at the end of this article). Some of them are quite scarce, such as the Sportsman (sic) series (1955-56), and the series of rather weird pictures of Space Travel (1956-57) (Figure 9).



History of Transport



British Locomotives



British Birds



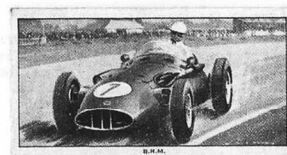
British Aircraft



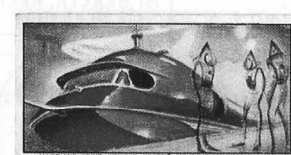
Sportsman



Dogs



Racing and Sports Cars



Space Travel

Figure 8. Some postwar tickets with coloured pictures.

Figure 9. More postwar tickets with coloured pictures.

The idea of paying a penny for a pretty weight-ticket was beginning to lose its attraction by the end of the 1950s. There were several reasons. From the consumer's point of view, it was now possible to buy cheap but reliable scales for use in the privacy of one's own home. From the manufacturer's point of view, inflation was gradually making the price of one penny uneconomical, and altering the existing machines to take a three-penny bit (say) would have been far too costly. From about 1958 no new cards were issued, although several of the old series continued in use well into the 1960s. Also, the machines were modified so that they printed only the day and month, but not the year of issue, presumably in order to cut down on routine maintenance.

There is one other type of weight-ticket that must be mentioned here. In 1925, Anatol Josepho patented a method of taking and printing photographs with an automatic coin-freed machine. His patent was bought by the Photomaton Corporation in the USA, and developed into the kind of photobooth that is still much in evidence today. In the UK the imaginative financier Clarence Hatry was quick to see the potential for this kind of machine and, alongside his Associated Automatic Machine Company mentioned above, he formed two other companies, the Photomaton Parent Company and the Far Eastern Photomaton Company. All these companies collapsed in the Hatry crash of 1929, but the germ of an idea survived. Why not combine the photographic machine with a weighing machine?

This idea was turned into practical reality by a German company, Photowaage. By 1931 they had developed a system in which a person sat on a weighing chair, above which was an indicator displaying his or her weight, and the date. The resulting photograph thus showed the date, the weight, and the person's face. A parallel British Company, Photoweigh, was formed in 1933, but it has not been possible (as yet) to discover whether the giant Avery had an interest in it. Examples of the Photoweigh tickets are rare, but they do exist (Figure 10). A high proportion of the known examples appear to record wildly inaccurate weights, suggesting that the problems of maintaining all the technical functions of the machine were substantial. Nevertheless, Photoweigh machines were still being used in the 1960s, and the company was not wound up until 1973.⁸

Figure 10. A Photoweigh ticket, 1940.



In the next instalment of this article I shall describe how the accuracy of public weighing machines eventually became a matter for Inspectors of Weights and Measures, and the collectable objects that bear witness to this process.

Notes & References:

1. R.H. Willard, 'Pennywise, not Pound Foolish' *Equilibrium* 2000(1) 2423-2433; 2000(2) 2457-2463. D.F. Crawford-Hitchins, 'European Coin-Ops' *Equilibrium* 2000(2) 2451-2456; 2000(3) 2493-2496.
2. Personal communication from Claus Borgelt.
3. R. Holtman, 'Another German Coin-Op' *Equilibrium* 2000(4) 2532.
4. Bill and Jan Berning, *Scales, A Collector's Guide* (Schiffer, 1999). See pages 97-98.
5. 'The Annual General Meeting, 1929', *Efficiency Magazine* [Avery Edition], 1929, p.337.
6. J.K. Galbraith, *The Great Crash of 1929*, Houghton Mifflin, 2009.
7. *London Gazette*, 13 February 1953.
8. *London Gazette*, 6 September 1973.
9. *British Trade Index to 1970, British Trade Handbook to 1970*, (The Cartophilic Society of Great Britain, 2006).

Appendix: A consolidated list of weight-tickets with coloured pictures

The standard reference for collectors of British 'trade cards' consists of a Handbook and an Index published by the Cartophilic Society of Great Britain.⁹ The system used in these books is confusing, and it casts no light on the historical background to the weight cards. I am currently assembling a representative selection of cards, which is leading to a more coherent account of the various series. In particular, the following list of post-war cards with coloured pictures is believed to be fairly accurate. I hope to make similar lists for the other cards in due course. In this list the reference number is the one assigned in the Index, pages 62-63.

<i>Title as on cards</i>	<i>Dates Seen</i>	<i>Index reference and comments</i>
Series of 24 British Locomotives	Mar 48-Nov 51	BRI-220
History of Transport Series of 24	Nov 48-Oct 50	BRI-310
Speed A Series of 24	Jun 49-Dec 49	BRI-370
Series of 24 British Birds	Apr 50-Aug 50	BRI-210
British Aircraft Series of 24	Feb 51-May 51	BRI-200
A Series of 36 British Motor Cars	Apr 51-Feb 52	BRI-230
Warships of the World Series of 24	Jan 50-Jun 53	BRI-410
Series of 24 Fresh Water Fish	Jul 50-Sep 51	BRI-290
Series of 24 Famous Trains of the World	Sep 51-Dec 51	BRI-260-1. Also re-issued later when no year printed.
Second Series of 24 Famous Trains of the World	Jun 52-Nov 52	BRI-260-2. WEIGH DAILY overprint
Dogs: A Series of 32	Jun 53-Jun 54	BRI-250-1. WEIGH DAILY overprint
Dogs: A Second Series of 32	Mar 54-Apr-55	BRI-250-2. WEIGH DAILY overprint
Sportsman [<i>sic</i>]-Series of 24	Jan 55-Jun 56	BRI-380
Space Travel: A Series of 24	Jan 56-Aug 57	BRI-360. Some with no year printed.
Racing and Sports Cars: A Series of 24	Year not printed	BRI-350
Dogs: A series of 32 [re-issue]	Year not printed	BRI-250. The dogs are the same as those in the <i>Second Series</i> , but there is no overprint, and the numbering is different.

Olive Grading

American olives are graded by size based on the number of olives per pound. While California produces $\frac{1}{2}$ of one percent of the World's olives, they have not standardized the sizes based on world standards. Rather, sizes in the US were set on 27 June 1917, when the California Olive Association adopted the following sizes:¹

SIZE	Standard	Medium	Large	Extra Large	Mammoth	Giant	Jumbo	Colossal
# per Lb	120-135	105-120	90-105	75-90	65-75	55-65	45-55	35-45

The US Department of Agriculture amended these sizes on 8 September 1967², 29 July 1977, 4 August 1981, 31 December 1981 and on 13 September 1983. The current grades for green olives are as follows:

Name	#	Number per Lb	Scale Mark
Smaller than Sub-Petite		221 or more	
Sub-Petite	00	181-220	?PW?
Petite or Midget	0	141-180	PT
Small or Select or Standard	1	128-140	ST
Medium	2	106-127	MED
Large	3	91-105	LGE
Extra Large	4	76-90	EX LG
Mammoth	5	65-75	MAM
Giant	6	53-64	GNT
Jumbo	7	42-52	JUM
Colossal	8	33-41	COL
Super Colossal	9	32 or less	SC

Member Bill James has in his collection³ a simple sheet metal pendulum scale marked on its front OLIVE SCALE. It is simply made from folded sheet metal with other parts riveted on so that they can move. The pendulum and pointer are from brass bar stock and the quadrant chart is stamped into the metal. The markings on the chart generally correspond to the olive grades shown in the table at left. However, two of the scale graduations, PW and SP do not make sense. Can any member shed more light on the subject?

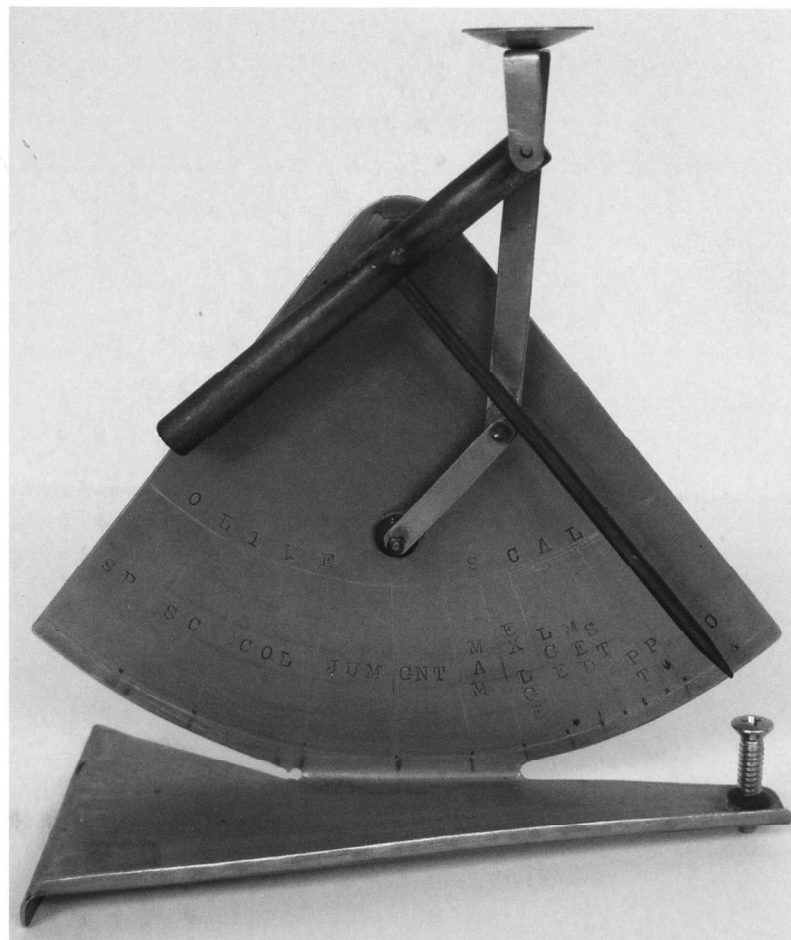


Figure 1. ▲▲ The olive scale was made from cut metal then bent to form the base. The cup is much like that on an egg grading scale, only much smaller.



Fig. 2. << Olive scale chart shows grades of olives in US.

Notes & References:

1. Canning Age, vol 1(?), no. 12 (January 1921), page 35.
 2. U.S. Dept. of Agriculture, United States Standards for Green Olives. Effective September 8, 1967.
 3. Formerly owned by Bill Doniger.
- Photos complements Bill James.

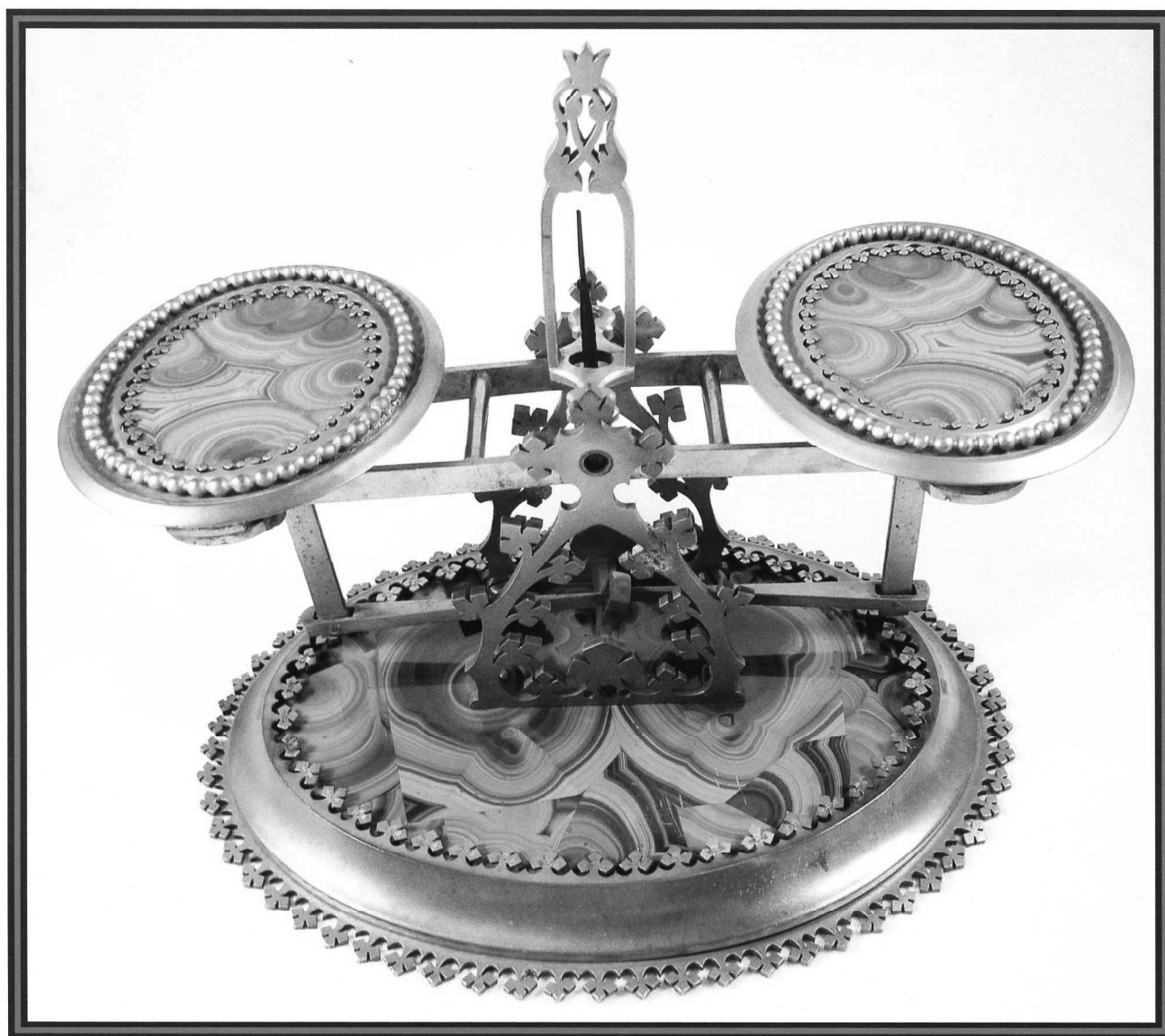


EQUILIBRIUM[®]

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

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PAGES 4133 - 4160



Cover Picture

The oval base on this lovely malachite embellished, gilded letter scale measures 7³/₈" by 5¹/₂". It is engraved Leuchars, 38 Picadilly but was definitely made by Mordan. Leuchars was a known retailer of Mordan scales. The scale was not equipped with a weight holder on its base, which is quite uncommon in postal scales of this caliber. The green of the malachite is surrounded by shamrock shapes on the base, the plates and on the A frame. The index pointer has lily shapes topped by a crown.

Larry Press Collection.

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The Lindermans of Amsterdam 2 BY STEPHEN BARNETT

The first part of this article recounted how I became interested in learning more about the Lindermans and the challenge of attributing their scales to a particular member of that family as well as the approximate date of the scale. In it, we started comparing ten diamond and coin scales to determine what features and information on them may help with this attribution. In this part, we continue with the comparison by examining the interior arrangement of the scales and weights, the scales themselves and the accessories that came with the scales.

Interior arrangement

Diamond Scales

In each case, the interior is carved out to hold the scale, the weights, a compartment for sheet weights, a tweezers/shovel combination (for the diamond scales), and a poker to make it easier to take the weights out of the case. (Figure 22) The cut-out compartment for each weight has a small notch on the side to allow the poker to get under the weight to pry it out.

Figure 22. ∇∇ Interior arrangement of Linderman diamond scale D-2 showing cut-out for tweezers and shovel combination.

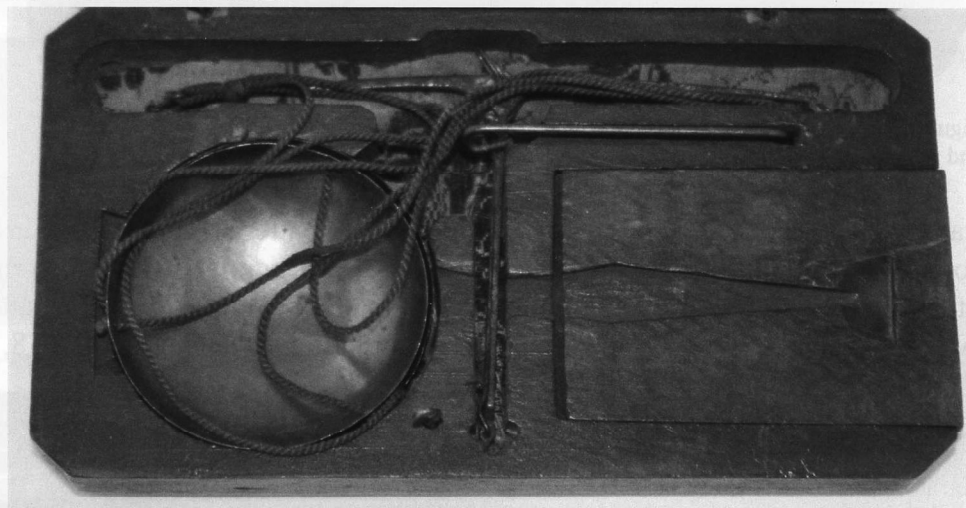


Figure 23. << Interior arrangement of Linderman diamond scale D-3 showing the weights arranged in a left to right, top to bottom pattern.

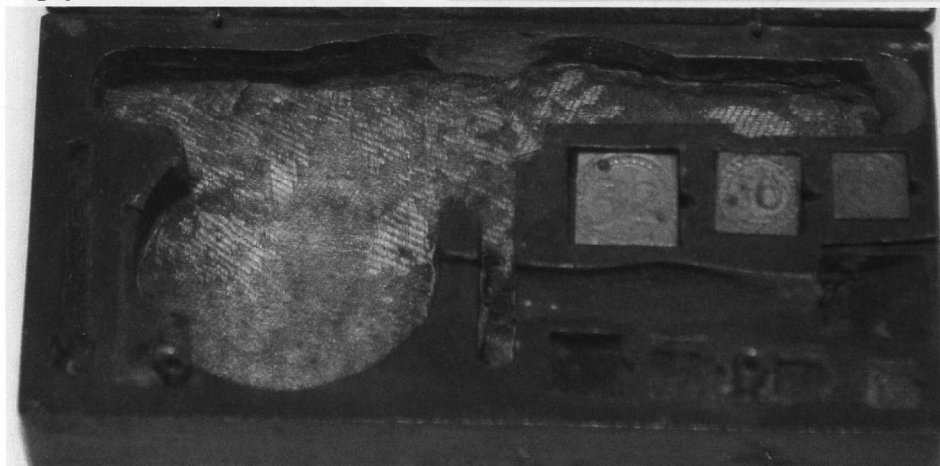


Figure 24. >> Interior arrangement of Linderman diamond scale D-2 showing weights in an alternating top to bottom, bottom to top and left to right pattern. The wire poker, below the box, has been removed from its slot above the weight compartment.



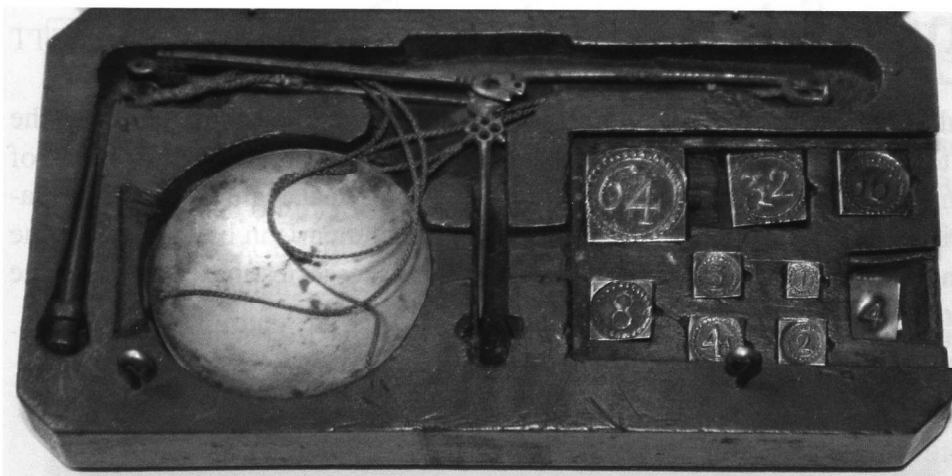


Figure 25. ▲▲ Abraham Groengraft diamond scale D-5 showing arrangement with poker at left and full complement of carat weights plus separate interior lids.

carat weights either in a left to right, top to bottom pattern (Figure 23) or in an alternating top to bottom, bottom to top and left to right pattern (Figure 24). Groengraft used a left to right top to bottom pattern, but the smallest were in a left to right bottom to top pattern (Figure 25). The patterns were followed regardless of whether the set of weights was what one might term the standard (32, 16, 8, 4, 3, 2, and 1) or the standard set augmented with larger weights such as 100 or 64 carats.

Figure 26. >> Interior arrangement of a small coin scale C-1.

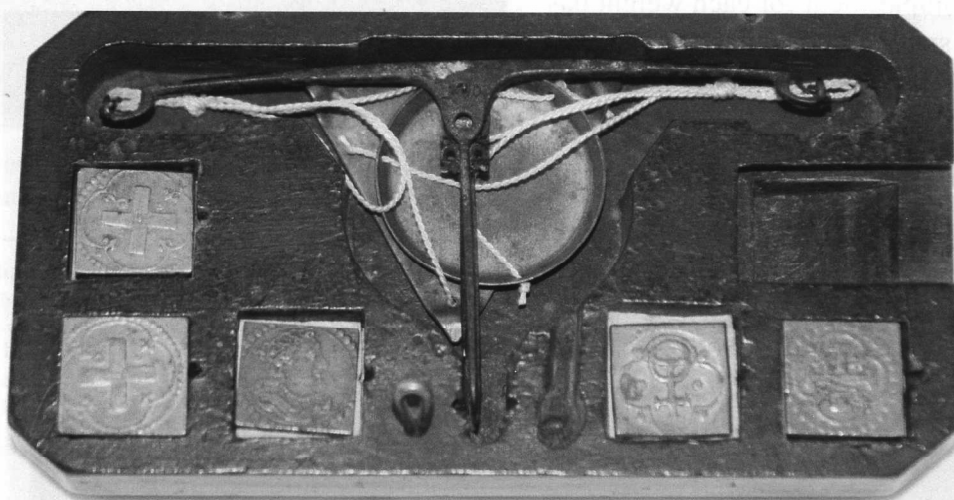
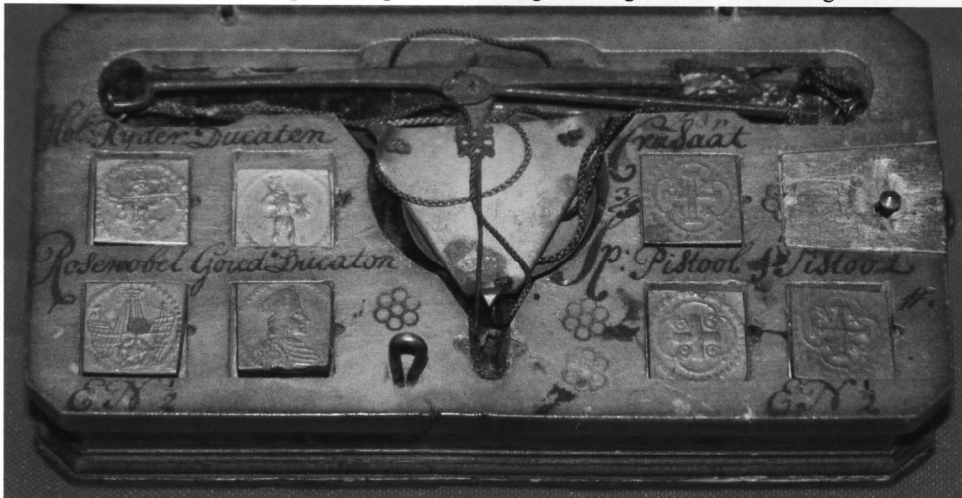


Figure 27. ▼▼ Interior of a larger Linderman coin scale C-2, with brass poker holding the drawer shut on the right side, and preventing the lid of the grain-weight locker from being lost.



For the Linderman diamond scales, the sheet weight compartment is on the right side of the case either under the handle of the tweezers or in the lower right hand corner of the weight compartments. Groengraft, at least in the one in my collection, put the sheet weight compartment under the handle of the tweezers. The carat weights are all arranged on the right side of the case with the heaviest being nearest the center of the case.

The Lindermans arrayed the

Coin Scales

The coin scales also have a covered compartment for grain weights. The smaller coin scale, C-1, has one layer of weights arranged along the edge of the case. (Figure 26) The larger coin scales have one set of weights arranged around the beam cut-out and a rectangular drawer, which slides out from the right side of the case, containing ten additional weight compartments⁵. (Figure 27, Figure 28 and

Figure 28. >> Interior arrangement of a large Linderman coin scale C-3 showing position of the enclosed weight drawer.

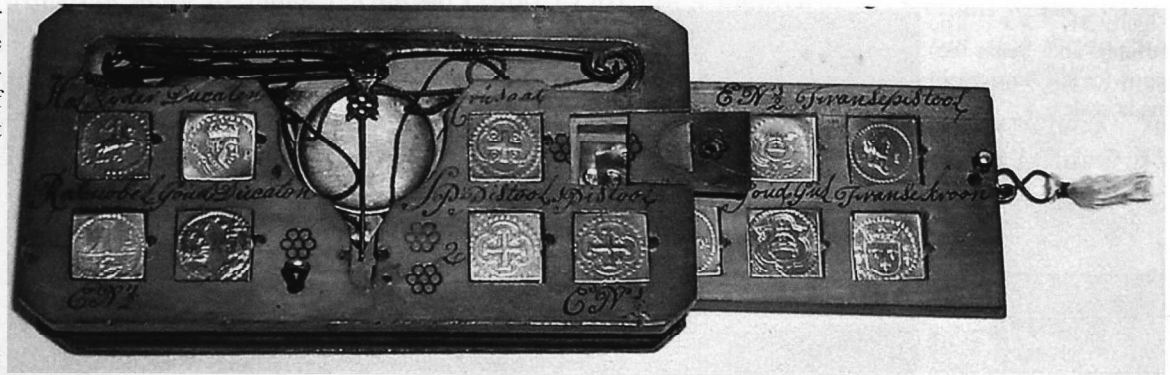


Figure 29. << Boerhaave Museum's large Johann Linderman coin scale with thirteen weights in the top level.

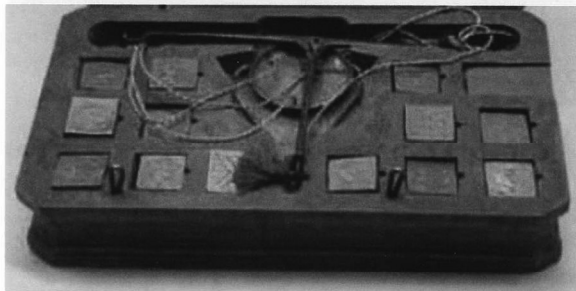


Figure 30. >> Interior arrangement of Linderman coin scale C-4 showing nine weights in top layer.



Figure 29) The poker is used to lock the drawer and grain weight compartment cover in place as shown in Figures 27 and 30. In some cases, the weight for the fractional coin is underneath the weight for the full coin.

Based on the samples we are studying, the scales came with seven weight compartments or, for C-4, nine weight compartments (Figure 30), in the top layer of the box, plus the drawer with its ten weight compartments. The Boerhaave Museum has in its collection a Johannes Linderman coin scale with 13 weight compartments, plus the sheet weight compartment arranged around the beam.(Figure 29) It is not clear from the picture if it also has a drawer containing additional weights.

The Scales

The beams all have swan neck ends with the cords attached via a metal "figure 8" link. The beams all have a slight arch with the high point at the center. The beams are tapered from middle to end with a rectangular cross section. (Figure 31) The cords are made from twisted silk thread either green or white. The white cords in C-1 are probably replacements. One of its suspension links is also a replacement. It is copper and smaller than the other one, which is original. The shears are generally of a plain design, some still having the silk tassel used to hold them when the scale was being used. The bases of the shears, where they attach to the beam pivots, appear to have three different designs, or perhaps variations of the same basic design. (Figure

Figure 31. >> The pointer and beam designs for six Amsterdam made scales.

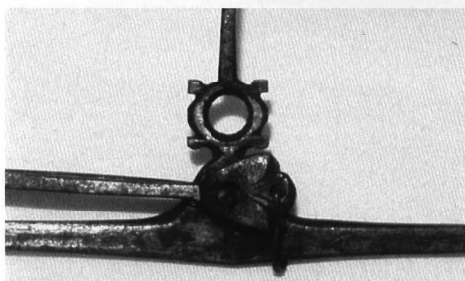
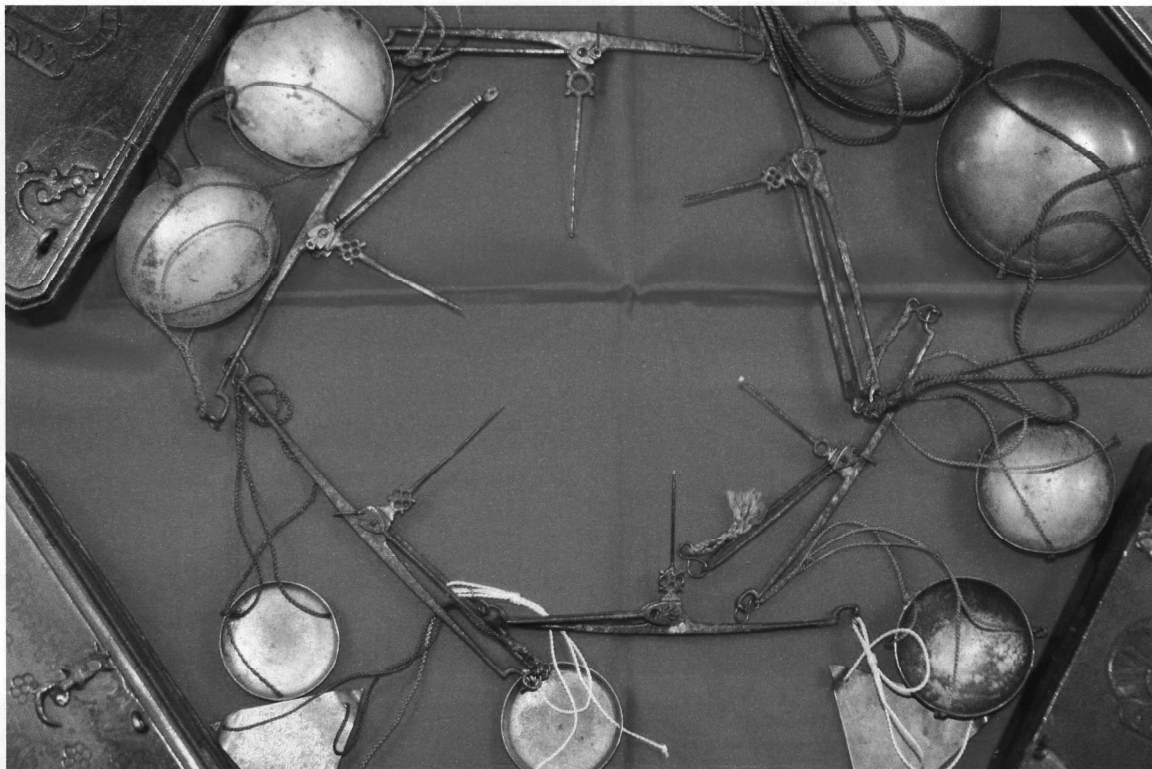


Figure 32. ▲▲ Base of shears for C-4.

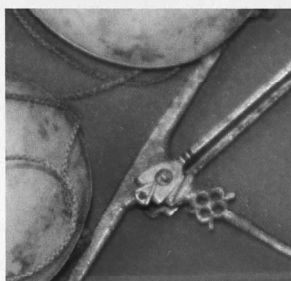


Figure 33. ▲▲ Base of shears for D-2.

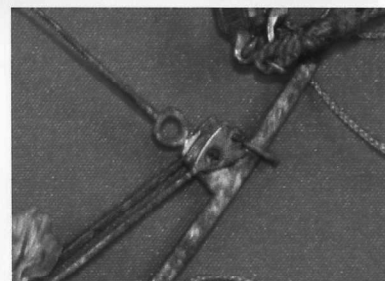


Figure 34. ▲▲ Base of shears for D-3.

32, Figure 33 and Figure 34) The pointers have either a sharp tip or one with a small sphere. The base of the pointer where it attaches to the beam has decorative piercings. The samples that I've seen have one of a few different designs for this section of the pointer: washer shape, rounded diamond with three holes pierced in the center, or rounded diamond with four holes pierced in the center. The rounded diamond shape may have "ears" either at the corners or along each edge. (Figure 31) The washer shape may have ears too. (Figure 32)

For the diamond scales both pans are circular concave. For the coin scales, one pan is a flat circular disk; the other is a flat triangular shape, typical for coin scales of the time. The pans are made of brass, and some appear to have been silvered. With one exception the pans do not have any markings on them. As Joe Lenorovitz stated in his letter, the round pan of C-4 has a circular mark stamped in it. (Figure

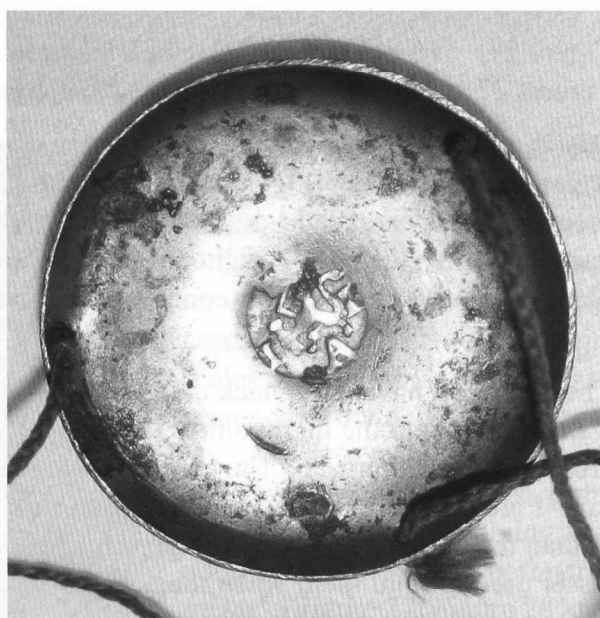


Figure 35. ▲▲ The mark stamped in the round pan of C-4.

35) This is the verification mark of Jacob l'Admiral (1699-1770). In a February, 2015 email to me, Ritzo Holtman wrote *l'Admiral combined several jobs to make a living: he used to be a verifier but also made and sold coin-scale boxes, was an etcher, and dealt in shells. He was 'general verifier' for all (17) Dutch provinces between 1750 and 1770 (nowadays those provinces are spread between Belgium and The Netherlands). He verified nationwide the 'troy' weights for the gold and silver dealers, banks, the mint, etc. It was l'Admiral's job to check the work of the makers (even his own).*

Table 3 - Description of the Scales and Pans

Scale Identifier	Beam Length (cm)	Pan Size and Shape (cm)	Design at Base of Pointer	Shears	Cord Color
D-1	10.7	4 cm round concave	Washer with ears	Plain	Green
D-2	12.5	5.5 cm round concave	Rounded diamond with four holes and ears on the sides	Plain	Green
D-3	9	3.5 cm round concave	Plain washer	Plain with gold tassel	Green
D-4	12.5	5.5 cm round concave	Rounded diamond with four holes and ears on the sides	Plain with gold tassel	Green
D-5	10.5	4.2 cm round concave	Rounded diamond with four holes and ears on the sides	Plain some decoration at top and base 6.1 x .7 cm	Green
C-1	9	2.9 cm round 4 cm triangular	Rounded diamond with three holes and ears on the sides	Plain	White
C-2	10.8	2.8 cm silvered round 3.5 cm triangular	Rounded diamond with four holes and ears on the sides	Plain with green and red tassel	Green
C-3	10.8	round triangular	Rounded diamond with four holes and ears on the sides	Plain	Green
C-4	10.8 ⁶	round triangular	Washer with ears	Plain	Green

Accessories

Poker

To assist with removing each weight from its compartment in the case, the diamond scales came with a poker in one of two forms. It could be a tapered brass cylinder with knob at top. D-1 (Figure 36) shows the poker resting in its slot in the box on the left side. D-3 (Figure 37) and D-5 (Figure 38) have the poker stored in the same place. D-2 has the other style poker. It is a brass wire suitably shaped and must have been

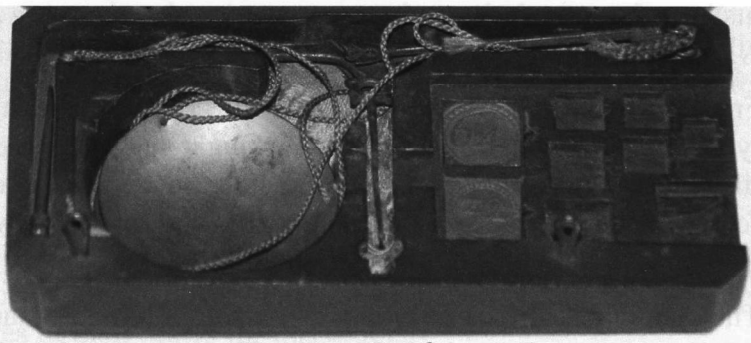


Figure 36. ▲▲ Linderman diamond scale D-1 showing the location of the poker in its slot on the left side of the box.



Figure 37. << Linderman diamond scale D-3 showing the location of the poker's slot on the left side of the box.

an option since the case was carved to hold it. Figure 24, on page 4135, at the bottom shows this poker and in Figure 39 the poker rests in the box between the weight compartment and the beam compartment. Linderman scale D-4, also shows the cut out for this style of poker just below the beam.(Figure 40)

Figure 39. >> Linderman diamond scale D-2 showing the location of the wire poker in its slot between the weight compartment and beam compartment in the box.

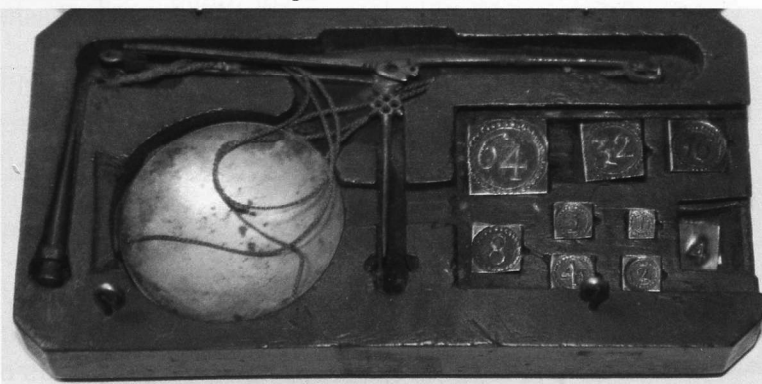
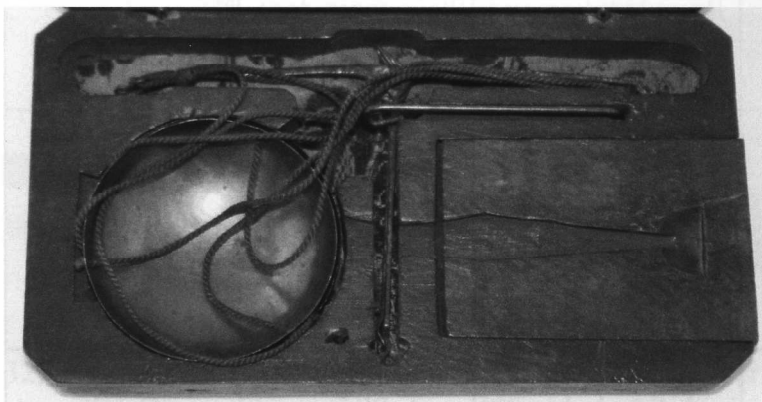


Figure 38. >> Linderman diamond scale D-5 showing the location of the poker in its slot on the left side of the box.

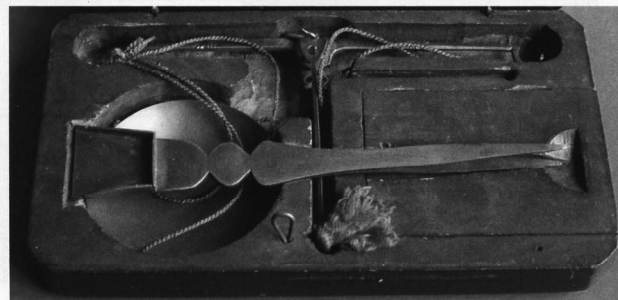


Figure 40. >> Linderman diamond scale D-4 also has a slot, just below the beam for a wire type poker.

The coin scales also had pokers. In C-1, there is a slot just to the right of the cut out for the beam for the poker (Figure 26). For the larger coin scales, C-2 and C-3, the brass poker is also used to lock the lower drawer of weights in place (right center of the case in Figure 29). Per Joe's description, C-4 has a wood poker which also is used to hold the drawer closed. (Figure 30) However, this is not the poker because as a postscript in his letter he says: *I almost forgot to mention that there is a tapered thin brass bar that fits under my scale that is used to help remove the weights.*

From my attempts to use the poker, I realized that it takes a certain amount of skill to do this easily and quickly. The tapered sides of the diamond weight suggest that one pushed on the edge of the top of the weight to tilt it up and then pull it out with the other hand. This is also somewhat difficult to do quickly and easily. I found it to be no easier to use the hooked wire that came with one of the diamond scales.

Tweezers/shovel combination

The diamond scales came with a combination tweezers and shovel to pick up individual stones or groups of stones to put on the scale and weigh. The tweezers/shovel rested in a carved out section of the box. (Figure 41)

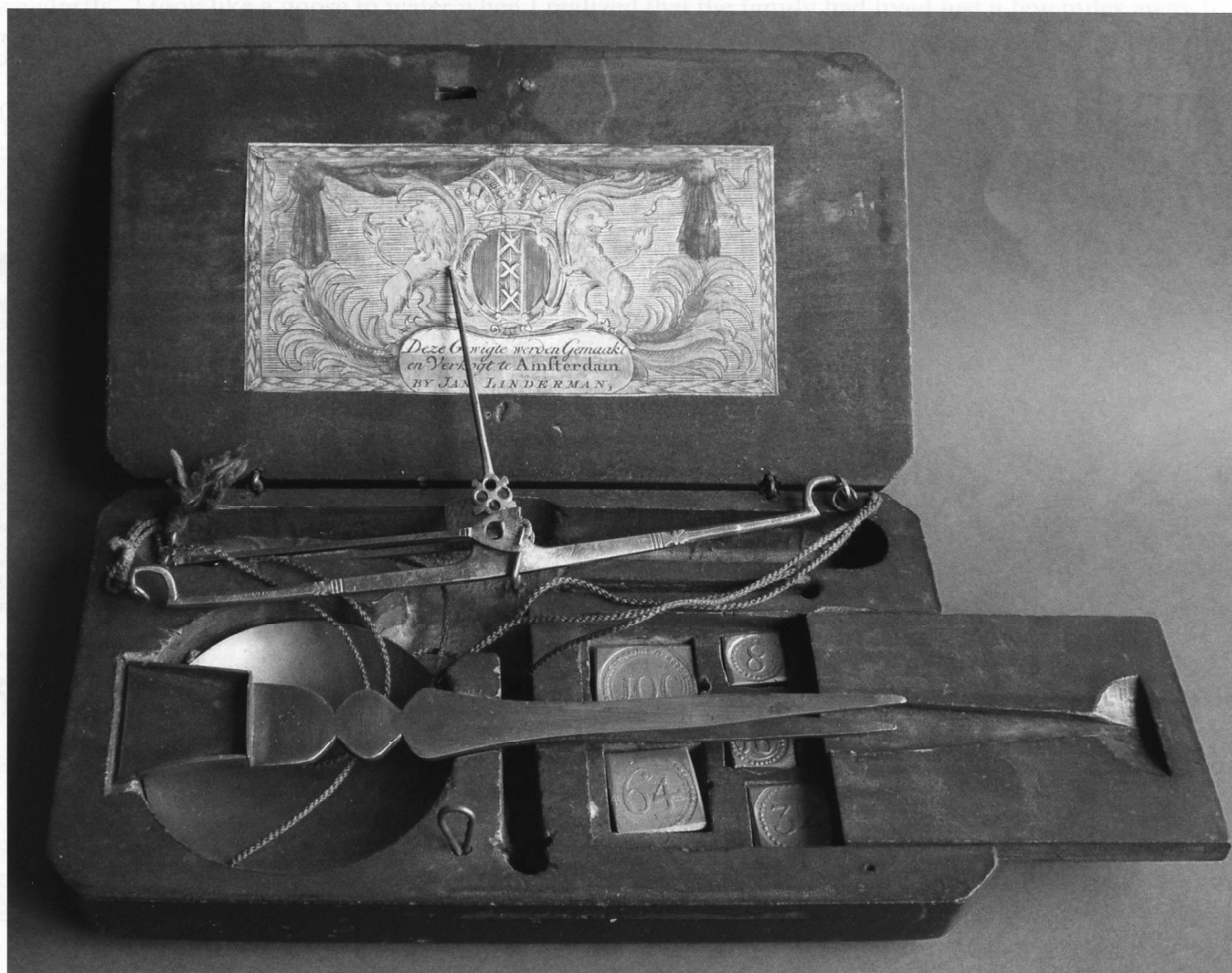


Figure 41. ▲▲ Jan Linderman diamond scale D-4 showing the full interior arrangement with the tweezer and shovel combination, the scale, weight compartment with its sliding lid as well as a slot, below the beam, for the missing wire weight poker.

Sadly, for many of the scales the tweezers/shovel combination is missing. Since the cut out was sized for the original one, it is difficult to find a correctly sized replacement.

Concluding Remark

Nothing about the interior arrangement, the beams and pans, or the accessories appears to provide distinguishing characteristics to date the scales or attribute them to one of the Lindermans. They all seem to be “typical” of diamond and coin scales made in Amsterdam during that period of time.

Notes & References

5. We use the term “compartment” to describe the cut out in the case, or in the drawer. The scales came with more weights than the number of weight compartments. Some of the weight compartments contained more than one weight, for example the 1 Pistole and the ½ Pistole.
6. Probably the same as C-2 since the scales and boxes are essentially the same.

Acknowledgements

This research and the article benefited from many ISASC members on both sides of the Atlantic who helped me to find examples of the Lindermans’ work. Diana Crawforth-Hitchins, Jeff Lenorovitz and Jan Berning provided many fine pictures to illustrate the features of their scales for this article.

Louis Jaenichen - The Name Seemed so Familiar

BY UTZ SCHMIDT



Figure 1. ▲▲ Report from H.M. Allardt in Hamburg, Germany, to H.P. Baldwin, Governor of Michigan¹, on progress of recruiting efforts, 1871. (Wegweiser = Guide). Letterhead drawing, left: 1870 pioneer homestead; right: same scene, 1880 vision of the future with "Michigan's Mountains" and nearby harbor. Villa and town in background have distinctive German character.

Recruit talent. Go Get Them. With these words His Excellency H.P. Baldwin, the Governor of Michigan, sent H.M. Allardt, his newly nominated Immigration Commissioner, to Hamburg, Germany, in 1869. He recognized the potential for industry and farming in the slow growing state of Michigan with an abundance of natural resources. Very unexpectedly, this effort produced a legacy for one of Detroit's future scale companies.

Did you ever hear of a trip to a tire store that will capture two years of your life, putting scales and balances on the backburner? This is the story. After retirement in 2002, the majority of my time had been dedicated to researching the leading manufacturers of price computing scales in Detroit, Dayton and Toledo [they indicate weight and price simultaneously], with the goal of a book in collaboration with "Mr. Stimpson," alias Greg Moss, also my editor for this article. Life changed abruptly when I chatted with Mike, the tire store owner, to shorten the boring wait for new tires. He asked if I could help with a book from Jeff, one of his friends. It turned out to be a German family Bible.

The very first page was filled with a hand-written family history, the dates and locations of the von

Zweydorffs. I took like a goose to water when I realized that the family had lived just a few miles away from my birthplace in Saxony, Germany, and had come, in 1884, to a place in the Thumb of Michigan, a few miles from my current home.

The surprise reached a second peak when I found out that they had joined Colonie Saxonia, the Michigan settlement founded in 1873. The 1880 census showed 254 people, or 59 families, with their birthplace in Saxony and a total of 113 families from Germany. Now I forgot all about scales and funneled all my time and energy into the new adventure and decided to write a book as a monument for the daredevil Saxon settlers. With a team of helpers, which included 18 descendants, we unleashed an avalanche of long-forgotten information, some of it buried in a French library and archives in Germany.

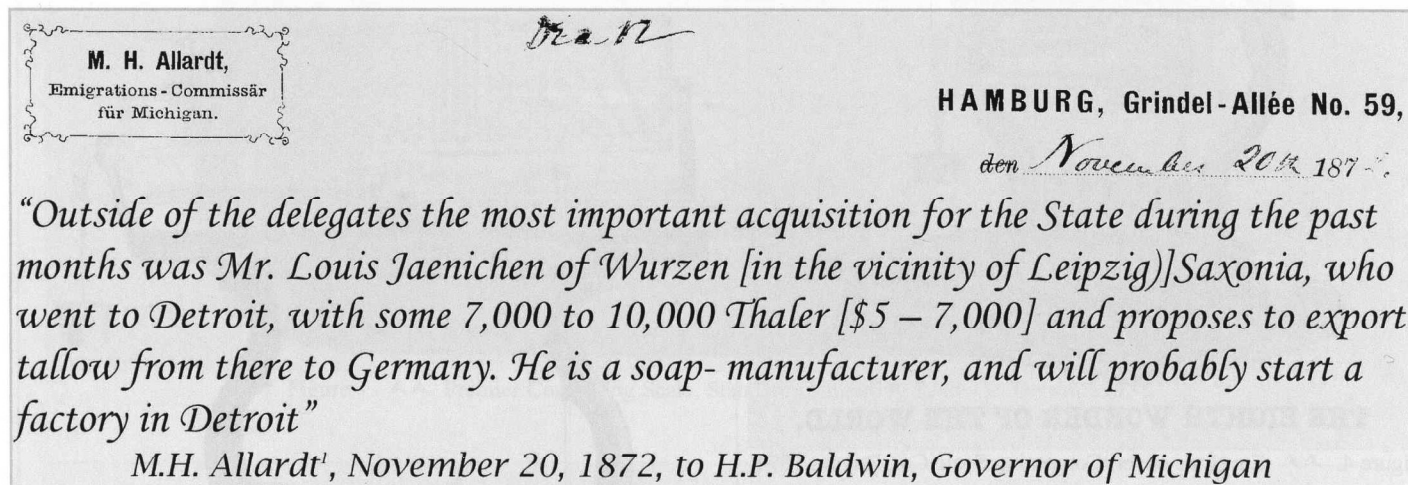


Figure 2. ▲▲ Most Important Acquisition - Mr. Louis Jaenichen.

Reading Allardt's monthly reports² to the Governor offered an unbelievable wealth of information for my story. They sent me back in time, allowing my participation in the well-described events of country and people. My thoughts lived in the German Empire of 1872, when I halted, reading the following words a second and then for a third time. My heart almost stopped. The text mentioned a name I had read before, Louis Jaenichen. Could this soap maker be related to my secret hero, inventor Louis Jaenichen? This possible connection needed to be further explored. The ship manifest reports Louis Jaenichen departing from Hamburg on October 30, 1872, with his wife, Susanne, eight-year-old son, Louis, and three more children ranging in age from one to six years, on the Steamer Thuringia³. The destination was New York and from there they went on to Detroit. A follow-up in the 1882 Detroit City Directory⁴ lists the father as a potash manufacturer, a raw material for soap manufacturing. He must have found out that the tallow business, rendering the fat

from cattle, was not for him. Nevertheless, as predicted, he had built a company to help clean the grime off Detroit's rapidly growing labor force.

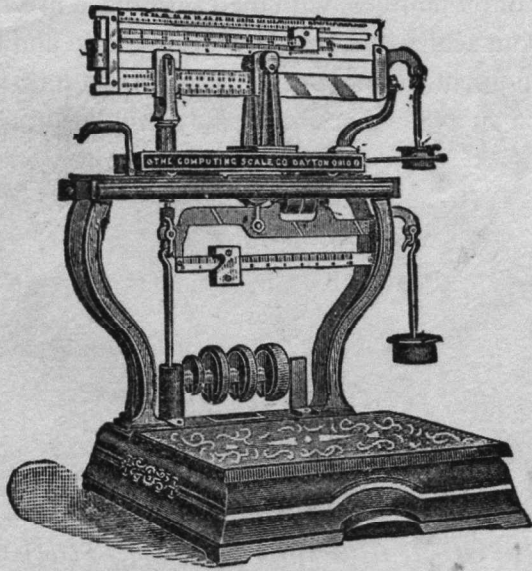
In 1886, Louis Junior, then 22 years old, started to appear in the directory, first as a machinist still living at home. In 1892 he had a partner and started a machine shop, Jaenichen & Nageborn, and four years later Louis became the sole owner of the now named Jaenichen Manufacturing Co. The entry of 1900 lists him a superintendent of the Standard Computing Scale Company Ltd. **Yes, yes, yes!** That was the proof I had searched for.



Figure 3. ▲▲ Float from Standard Computing Scale Co. at City of Detroit's Bi-Centennial in 1901, Collection of Detroit Historical Museum⁵.

THE COMPUTING SCALE

IT HAS BRAINS, AND ALL BUT TALKS.



THE EIGHTH WONDER OF THE WORLD.

Figure 4. ▲▲ Envelope cover, Computing Scale Co., Dayton 1894

weight and price were displayed. In the following year Toledo entered the market with an automatic fan scale. To make things worse for Standard, in 1902 the Computing Scale Co. of America combined the large marketing network of Dayton with the patents of Walter F. Stimpson our great Michigan scale visionary and genius. None of the companies had enough capacity to supply the huge, fast-growing, lucrative market; so each was able to

Louis was right there at the start of Standard, making its first computing scales. At that point the design of the only product, a mechanical platform scale, was already outdated. It required several manual operations and brains to get weight and price. The Dayton scale, with the same complexity, had already struggled to compete against Walter F. Stimpson's computing table-with one single move of the slider to equilibrium, immediately

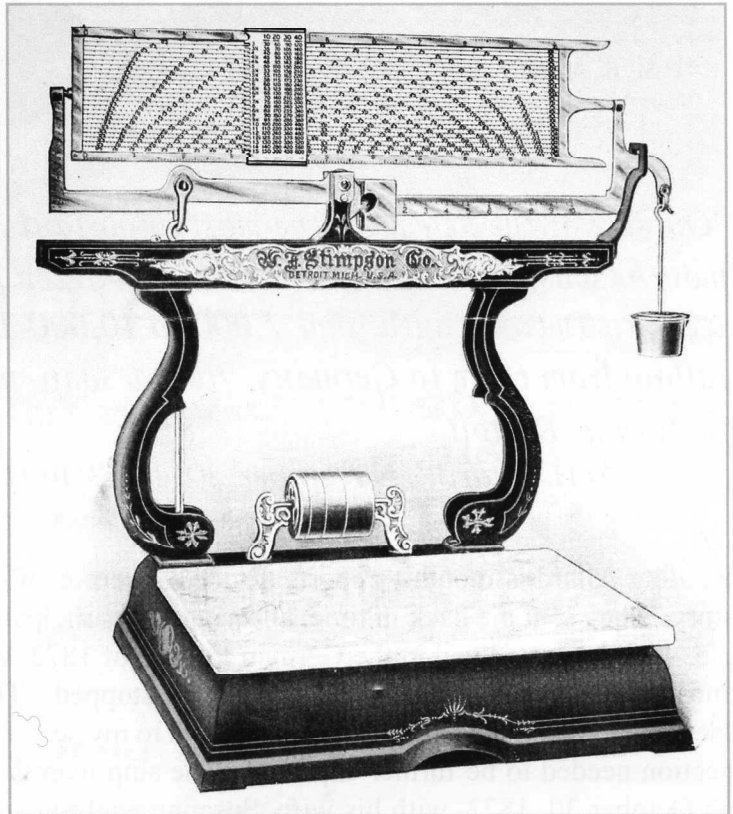


Figure 5. ▲▲ W. F. Stimpson Scale with Table 1900⁸

L. JAENICHEN.
WEIGHING SCALE.

APPLICATION FILED APR. 2, 1907.

901,297.

Patented Oct. 13, 1908.

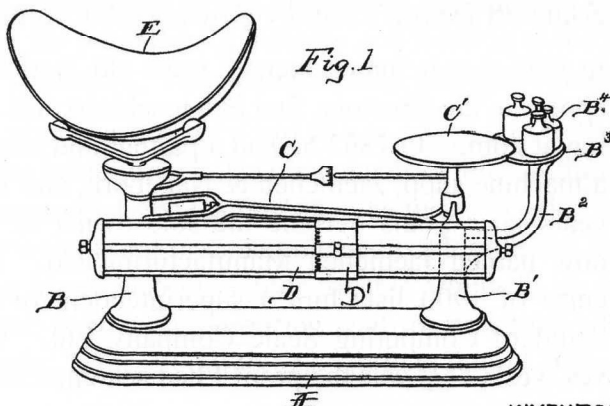


Figure 6. ▲▲ Patent for the Premier Computing Scale shown in Figure 7.

INVENTOR
Louis Jaenichen

get its share for the time being. Louis' 1904 patent application for the Premier with a table paved his way to fame in the company. The same table was also added to the platform scale. With these innovations Standard was at least competitive.

Thiery & Kendrick Mfg. Co, also a company in its infancy and possibly a supplier of brass parts for Standard, took a liking to the young man and hired Louis in 1908 as its president. During his time at Thiery & Kendrick, Louis still stayed in close contact with Standard because the company's livelihood was again in danger. Automatic barrel (cylinder) scales from Toledo and Dayton started to compete. Louis took his inventing pencil and came up with a brilliant design and nifty features, all patented by him.

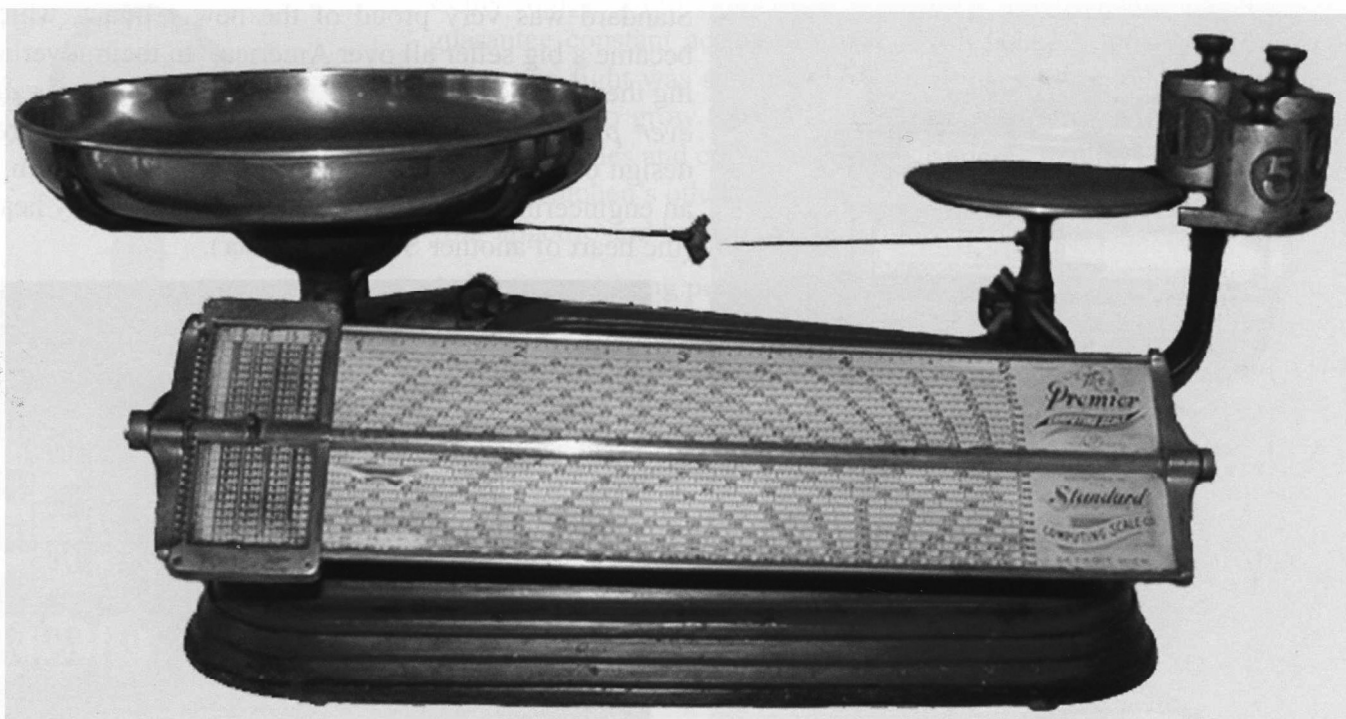


Figure 7. ▲▲ Premier Computing Scale, Standard Computing Scale Co. Detroit 1907¹⁰

Quick Balance Weighing.

Quick Balance Weighing Scales—The quickest acting and most accurate scale of the kind on the market, will promptly register 1-16 oz., equipped with genuine Siberian Agates throughout, upper beam weighs in pounds by ounces, lower beam weighs in ounces by sixteenths Capacity 20 lbs., Dimensions 22x7 inches, 14 inches high, seamless brass nickel plated

Scoop, — — — — — Each \$30.00
 Sugar Pan or Marble Platform furnished in place of Scoop if desired.

Figure 8. ▲▲ Standard Computing Scale Co., Detroit, J.S.H. & Co. Catalog 1907¹¹

His 1911 barrel-top scale is a crown jewel of my collection. Nevertheless, he stayed on at Thiery & Kendrick until 1913, when a family member of the Kendrick's, groomed for the position, took over.

Standard, happy and relieved, welcomed Louis with open arms back to his position as a superintendent, a creative environment for further inventions.



Figure 9. ▲▲ Standard Computing Scale Co., Detroit, 1911, Collection of Detroit Historical Museum¹²

Standard was very proud of the new product, which became a big seller all over America. In their advertising they claimed to have *The most artistic looking scale ever placed on a Merchant's counter*. The filigree design of the lever system that supports the platform is an engineering marvel, as I can attest with all my heart (the heart of another Saxon engineer).

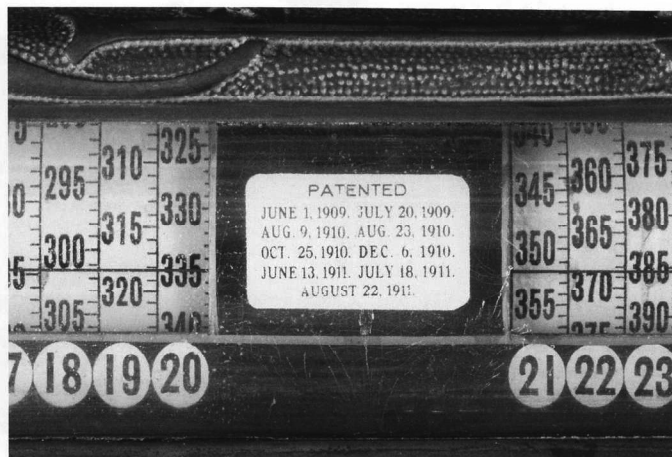


Figure 10. ▲▲ Magnification of Weight, Unit Price, Total Standard Computing Scale 1911

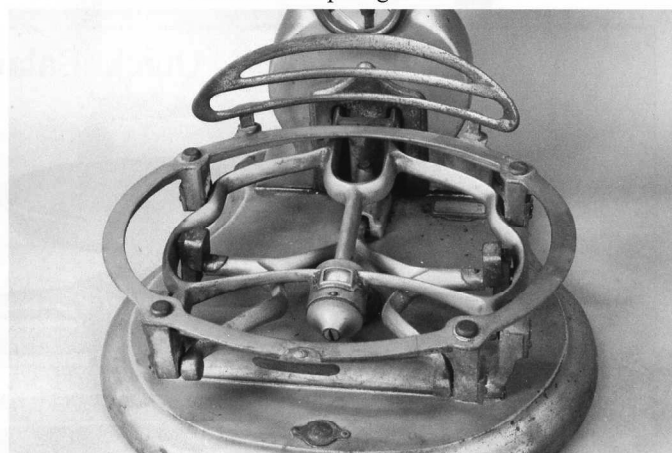


Figure 11. ▲▲ Filigree Design of Platform & Lever System, Standard Computing Scale,¹² 1911

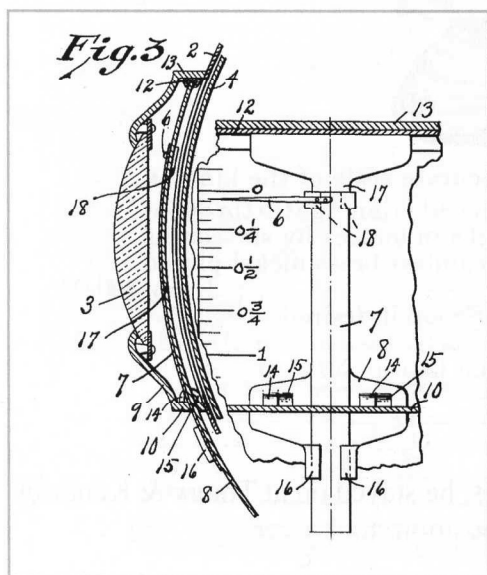


Figure 12. ▲▲ Weight & Price Indicating System, Standard Computing Scale,¹³ 1911

Getting older, I appreciate more and more another statement from the same ad, *The value and weight figures are largely magnified so that the reading of them is made easy*. This can-you-see-it-now patent with a special indicator wire and a lens over the length of the barrel top, found industry-wide use.

No rest for the wicked, Toledo spread "Bad News." The greed for more market share plunged the competitors with Standard, governmental Weights & Measures and customers into the abyss of the Honest Weight. It was touted that a spring counter balance stole money from the customers due to temperature changes. Using gravity and a pendulum like the Toledo scales, the customer received what she paid for, the honest weight.



Figure 13. ▲▲ Portable Automatic Scale¹⁴

Neither Allardt nor the Governor had a clue that the report on the Jaenichen family had a hidden agenda. The outcome was two talented people for the growth of Michigan: Louis Jaenichen, the soap maker, and his eight-year-old son, Louis, who turned out later, as we just read, to be an engineering genius with 48 patents. His brilliance kept the Standard Computing Scale Company of Detroit at the cutting edge of technology for more than 30 years as one of the four leaders in their industry.

Amazingly, at a hardware store in Farmington Hills, Michigan, Louis' artistic scale is still on display 104 years later, still used for weighing nails and similar items. Looking back, Standard and the scale's proud father, Louis, should have continued their ad with: *Very durable price computing scale, guaranteed for 100 years* (or at least for life – the life or the first owner). What a monument for Louis.

Now you also understand why the name Louis Jaenichen seemed so familiar and why he became my secret hero. Without him, very likely, Standard would have started and shut down soon thereafter, like so many hopeful companies. As for me, Louis brought me back to scale research, but after this short interlude, it will have to wait while I return to the Saxony Colony.

Louis equipped the Standard scales with a “thermostatic mechanism” to guarantee constant accuracy of the springs, but it took quite some time before the fight was sorted out. Louis meanwhile plodded along inventing, helping to grow Standard into a food equipment supplier with large industrial scales and coffee and meat grinders. I could go on and on about Louis Jaenichen's other important contributions, but I decided to just whet your appetite and bring more in a future publication.

Aside from gaining personal information on Louis, there is a possible second connection between my book on Colonie Saxonia and Standard. As I know from the colony's descendants, some of the farmers supplied stores in Hamtramck, adjacent to Detroit, and it is possible that they saw the Standard scales in Jaworski's store.



Figure 14. ▲▲ 1911 Standard Computing Scale at Jean's Hardware, 2015, STILL IN USE¹⁵



Figure 15. ▲▲ Frank Jaworski's Sausage Store, Jos. Campau, Hamtramck, Mich. 1928¹⁶

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3. Passenger list Steamer Thurinia 30 Oct 1872 on ImmigrantShips.net
4. Detroit City Directories 1882 to 1922 at Burton Collection, Detroit Public Library
5. United States Federal Census 1880, 1890, 1900, 1910, 1920
6. Float from Standard Computing Scale Co. at City of Detroit's Bi-Centennial in 1901, Collection of Detroit Historical Museum
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14. Catalog Automatic Weighing Scales to Meet Every Requirement – Portable Automatic Scale, private collection
15. Barrel Top Automatic Computing Scale, Standard Computing Scale Co., Detroit Mich., 1911, Jean's Hardware Store, Farmington Hills, Michigan.
16. Picture of Frank Jaworski's Sausage Store, Jos. Campau, Hamtramck, Mich. 1928

Collecting Ephemera related to Personal Weighing Machines - 2

BY NORMAN BIGGS

The second of these articles is mainly devoted to the metallic tokens used by mechanics and inspectors to check the personal weighing machines that were available to the public. Recall that Everitt's patent of 1884 had two important features. The first one, the apparatus for printing a ticket, was not entirely new. In 1870, the American firm of Fairbanks had taken out a British patent for printing the weight recorded by the steelyard of a platform machine. In the 1880s, Pooley's were making a similar device, possibly the same (Figure 1).

A Frenchman, E.A. Chameroy, had invented another mechanism, and his British patent of 1875 was acquired by the firm of W.&T. Avery. In Figure 2 there is an example of the ticket produced by this device in 1886. It is particularly interesting because it was obtained by John S. Pooley, a director of his family firm, who was obviously checking on the apparatus supplied by a competing firm. But, it must be stressed that these devices were not like the one envisaged by Everitt for use with a personal weighing machine.

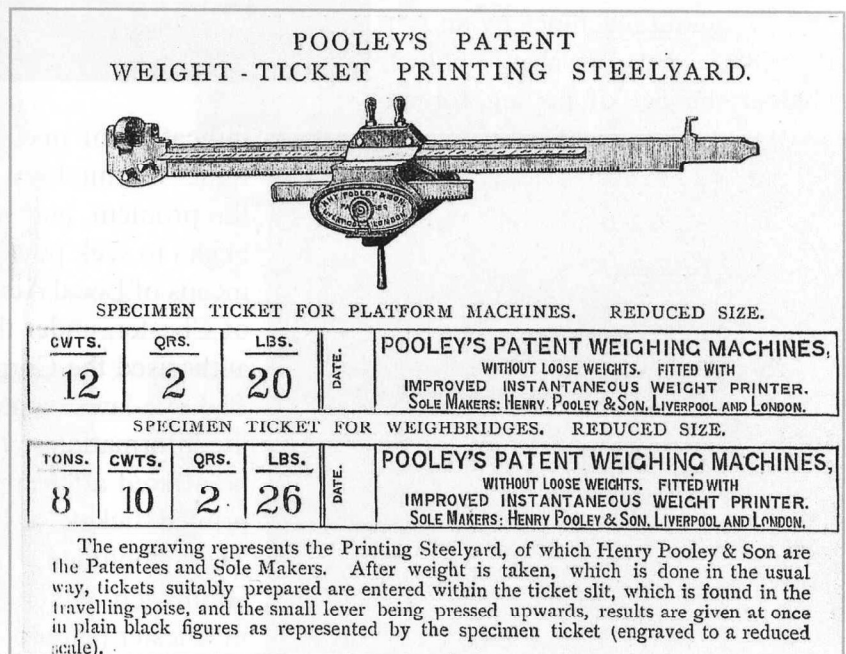


Figure 1. ▲▲ The Pooley ticket-printing steelyard, 1880s.



Figure 2. ▲▲ A ticket obtained by J.S. Pooley from an Avery/Chameroy machine in 1886.

The second feature of Everitt's 1884 patent was the mechanism for 'coin-freed' operation. Apparently Avery's had a similar mechanism around the same time, because in 1886 they set up the South Africa Automatic Machine Company which had patent rights for coin-operated machines.¹ Although this company lasted only a few years, the production of penny-in-the-slot machines in the UK eventually became a major concern, and the Avery 1906 catalogue contains not only weighing machines (as shown in Part 1 of this article) but also

vending machines for postcards, sweetmeats, cigarettes, and so on. The maintenance of these machines created the need for a new kind of collectable item, a token-weight (Figure 3). This was a metal disc of the same size and weight as a current penny, which could be used to check that the mechanism was working properly. Since the mechanic had access to the inside of the machine, the token could be retrieved after use.

Figure 3. >> Penny weight-token issued to Avery mechanics.

The legal status of personal weighing machines intended for use by the public was uncertain. The great Weights and Measures Act of 1878 had empowered Inspectors to check the accuracy of weights and measures that were in 'use for trade', and this provision had been extended to weighing machines by an Act of 1889. But, it was unclear whether the act of paying for an

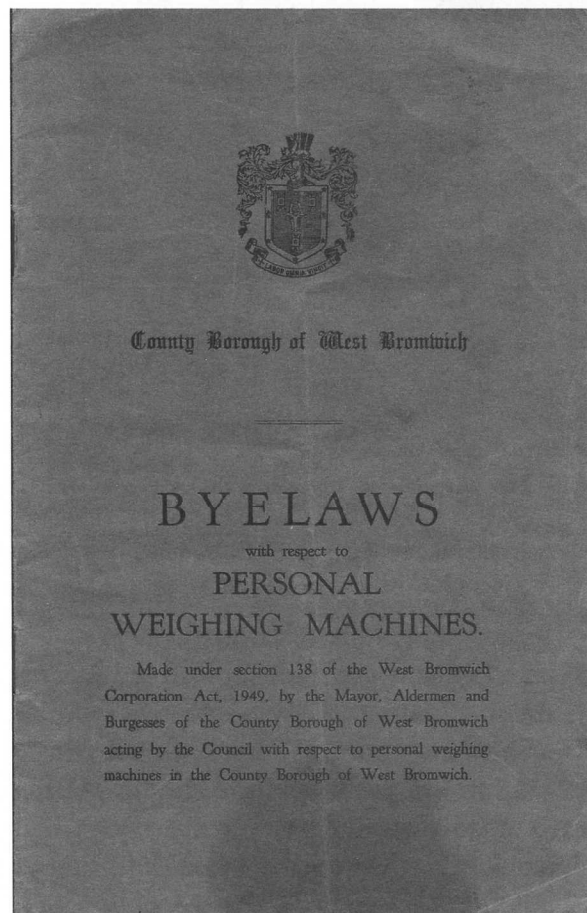


Figure 4. ▲▲ Booklet containing the West Bromwich byelaws.

indication of one's own weight was covered by the 'use for trade' terminology. Subsequent legislation had not addressed the problem, and so it was that in the 1920s local authorities began to seek powers to regulate public weighing machines by means of Local Acts.² The first place to do so was the Borough of Chester, under the Chester Corporation Act of 1929, which authorised the Corporation to make bye-laws for this purpose. The bye-laws³ contained specific rules covering such things as the information to be displayed on the machine, the marking to be affixed after approval by an inspector, and the format of a printed ticket. Many other local authorities followed suit. They included, in 1949, the County Borough of West Bromwich, which promulgated bye-laws similar to those used in Chester (Figure 4).

In order to test a coin-operated weighing machine, the inspector of weights and measures would need a coin or a token. But, unlike the mechanics who used the Avery token shown above (Figure 3), the inspector was not able to retrieve the object after use. It seems that in many places the inspectors were provided with a bag of pennies for this purpose, but a few local authorities obtained special tokens. Two types from West Bromwich are shown in Figure 5.

These tokens would have cost far more than a penny to produce, and since they could not be retrieved after use, it was hoped that the person who collected the cash from the machine would return the token to the issuing authority. A common type

of token, used by several local authorities, is shown in Figure 6. But there were several other designs, as shown in Figures 7 and 8. A list of local authorities which are known to have issued such tokens is appended to this article.

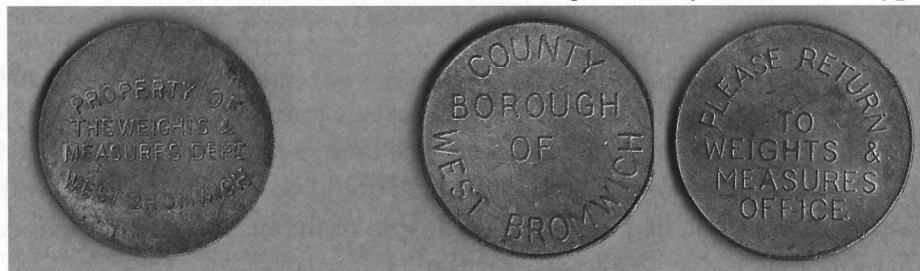


Figure 5. ▲▲ Two weight-tokens used in West Bromwich. The one on the left is uniface.



Figure 6. ◀◀ A common design of weight-token, as used in Chesterfield. The same design was used in Derbyshire, Nottinghamshire, the West Riding of Yorkshire, and Bradford.



Figure 7. ▲▲ Weight-tokens from Birkenhead and Grimsby.



Figure 8. ▲▲ Weight-tokens from Leeds and Rotherham.

In 1948, the Board of Trade set up a committee to review the legislation relating to weights and measures in the UK. The Act of 1878 was still in operation, and although subsequent Acts had modified it, the meaning of its basic terminology had not been clarified. The committee's discussions ranged widely, and included the vexed question of the legal status of personal weighing machines available for public use. Their conclusions were published in the Hodgson Report⁴ of 1951. Paragraph 182 of the report began as follows:

There has long been some doubt as to whether the large number of personal weighing machines which are available throughout the country to the public, their operation usually requiring the insertion of a penny, are in use for trade within the meaning of the Weights and Measures Acts.

The report went on to point out that the existence of Local Acts had created a confusing lack of uniformity in practice. This was followed by a clear statement that the committee considered that these machines were indeed in 'use for trade', and consequently they should be covered by national legislation.

Politicians find it hard to win votes by legislating about weights and measures, and it took many years for parliament to implement the committee's recommendations. Eventually, in 1963, a great new Weights and Measures Act swept away the 1878 Act and its subsidiaries. Section 9 of this Act contained a new attempt to define the term 'use for trade', beginning with the usual opaque legal jargon.⁵ Thus it stated that 'use for trade' means *use in Great Britain in connection with, or with a view to, a transaction for the transferring or rendering of money or money's worth in consideration of money or money's worth . . .*

Fortunately this was followed by a remarkably clear statement the definition should apply to *any weighing or measuring equipment which is made available in Great Britain for use by the public . . .*

It remained only for rules governing the inspection of personal weighing machines to be drawn up, and these were eventually published in the form of Statutory Instrument 1965, No.123. The rules were based on the earlier local ones, and were very specific.⁶

Where the weight is indicated on a ticket by means of an arrow which points to a scale marked with graduation lines, the said device shall be such that

- (a) the arrow is sharply defined;*
- (b) the ends of the graduation lines which are nearer to the head of the arrow are all in line;*
- (c) the distance between the head of the arrow and a line passing through the nearer ends of the graduation lines does not exceed 1/16 inch;*
- (d) the graduation lines are not less than 1/16 inch long and 1/16 inch apart;*
- (e) alternate graduation lines are clearly and legibly marked with the weight they represent and not less than two such marked graduations appear on every ticket;*
- (f) not less than one graduation line appears on either side of the point indicated by the arrow.*

Of course, we know from the evidence of the ephemera that by 1965 the heyday of the penny-in-the-slot, ticket-issuing, weighing machine was long past. The problems of complying with the rules set out in S.I. No.123 were enough to ensure that the decline was terminal. The change to decimal currency in 1971 would have ensured that the old penny coin could no longer be used, but by that time the coin-freed weighing machine had virtually disappeared.

In the next part of this article I shall describe the ephemeral items associated with the weighing of babies.

Appendix: Local authorities where the Inspectors used penny tokens

This is a provisional list of types known to the author at the time of writing (2015). Please tell me if you know of others⁷. The tokens are all penny-sized, and their weight is about 10 grams, with some variation. The terms 'brass' or 'copper' are used here to denote the appearance of the item, rather than as a firm opinion as to its metallic content. The status of the issuing authority is denoted by the abbreviations: C = county, CB = county borough, B = municipal borough.

Birkenhead (CB): brass.

Bradford (CB): one design, with brass or copper appearance.

Chesterfield (B): copper.

Derbyshire (C): copper. Two types, one for Matlock District, one for Derby District.

Grimsby (CB): brass.

Leeds (CB): brass, with a central hole.

Liverpool (CB): brass. Two types, one with address in Byrom Street (up to 1965), one with address in Great Crosshall Street (1965 onwards).

Nottinghamshire (C): copper.

Rotherham (CB): brass.

Salford (B): brass.

West Bromwich (CB): brass. Two types, one uniface with incuse lettering, one with raised lettering on both sides.

West Riding (C): copper, often counterstamped with a number.

Notes and references

1. L.H. Broadbent, *The Avery Business*, (Avery, 1949), pp.46-47.
2. 'Personal Weighing Machines' *Monthly Review*, xxxvii (1929) p.164. See also xxxviii (1930) p.50, and xxxix (1931) p.4.
3. 'Personal Weighing Machines – Chester Corporation Byelaws', *Monthly Review*, xxxix (1931) pp.196-198.
4. *Report of the Committee on Weights and Measures Legislation*, (HMSO, 1951).
5. J.A. O'Keefe, *The Law of Weights and Measures* (Butterworths, 1966) pp. 103-107.
6. O'Keefe, *loc. cit.*, pp.545-553.
7. A good selection can be seen online at Mals Machine Tokens: sites.google.com/site/malsweights/home.

The Second Dimension

BY JOHN KNIGHTS

The tanning of animal hides into leather is a trade that has been carried on for centuries and the resulting products have proved to be both useful and valuable materials.

The tanning process itself, however, was something of a social pariah and for much of history it was not permitted within the walls of the town. It was exiled to extra mural locations where the polluting and noisome business could be carried on well away from the ultimate beneficiaries of the trade.

From the extremely unpleasant tanning process a valuable product resulted, which was sold on to shoemakers and other leather workers. The only basis on which the worth of a tanned hide can be effectively assessed is by reference to its area, but to assess the area of such an irregular shape is not an easy matter.

The accurate assessment of a non-rectangular area was probably impossible in the days before the understanding of the mathematical methods which allow irregular areas to be calculated. Prior to this the best method of estimation was the use of the 'hand frame', a rectangular frame subdivided into 6 inch (15cm) squares, giving incremental areas of $\frac{1}{4}$ square foot (0.02 sq metre). This would be laid on the piece being measured and the number of squares within the area counted. The bits round the edges would have to be estimated as part squares and summed up as whole square equivalents. An experienced user would be able to estimate the area with some degree of accuracy but it would, nonetheless, be a slow and laborious process.

In 1854, a Swiss inventor called Jacob Amsler (aka Jacob Amsler Laffon) devised a 'polar planimeter,' a mechanism which could accurately calculate the area of an irregular shape. Planimeters had been known before but the Amsler pattern was a more practical device consisting of two articulated arms with a tracing stylus on one end. In operation the weighted base of the instrument is placed on the area to be measured and the stylus passed round the perimeter. A graduated wheel variously rotates or slides as the arms move and when the stylus has moved completely around the outline the area is indicated on the wheel. This device is still in use today by draughtsmen, engineers, etc. and a scaled up version has been employed as a leather measuring instrument (Fig.1).

Although accurate, this device was again too laborious for use in a commercial situation where a more automated approach is called for.

Such a device was a development of the 'hand frame' known as a 'pin machine' which was a device that automated the process of totalising a number of digital increments that approximate to the area to be measured.

The device consists of a table, constructed of slats with gaps in between. A cover for the table is pivoted on a knife edge at the rear and contains a number of holes into which loose fitting metal pins are inserted. The pins are mushroomed at the top to prevent them dropping out of the frame. The pins run in parallel lines from front to rear so that when the frame is closed on the base all the pins hang down between the slats. The pins are also graduated by weight, with those at the rear being heavier than those at the front, so that each one exerts an equal moment about the rear pivot when the cover is hanging horizontally.

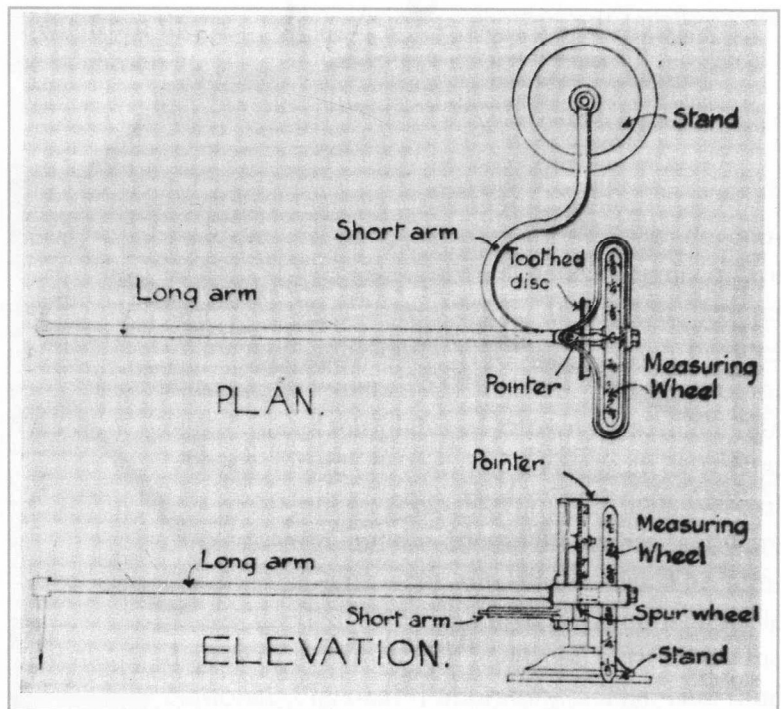


Figure 1. ▲▲

A spring balance hangs from a bracket connected to a pillar at the rear of the table, over the front of the pin frame. The front edge of the frame is attached thereto by cords or chains so that the weight of the frame is partially borne by the weighing machine when it is horizontal.

In operation, the frame is lowered so it is parallel with the table and all the pins hang through the gaps in between the slats and the weight is thus partially carried by the balance. The weight indicated on the scale, when all the pins are unsupported, in effect gives the result for a zero area.

To measure a tanned hide the frame is raised and the hide is laid flat on the slatted table. When the frame is lowered again the pins which are over the hide are lifted clear of the frame and their weight is subtracted from the total. The remainder of the pins hang through the frame and are still weighed. The difference between the initial weight and the reduced weight is proportional to the area being measured as the difference in weight 'counts' the number of pins being supported. Provided the area represented by the weight of all the pins is known, the area of the hide under test can, theoretically, be ascertained. To accurately represent the area being measured, an infinite number of pins with infinitesimal spacing would be required so clearly a realistic configuration can only approximately estimate the area being measured.

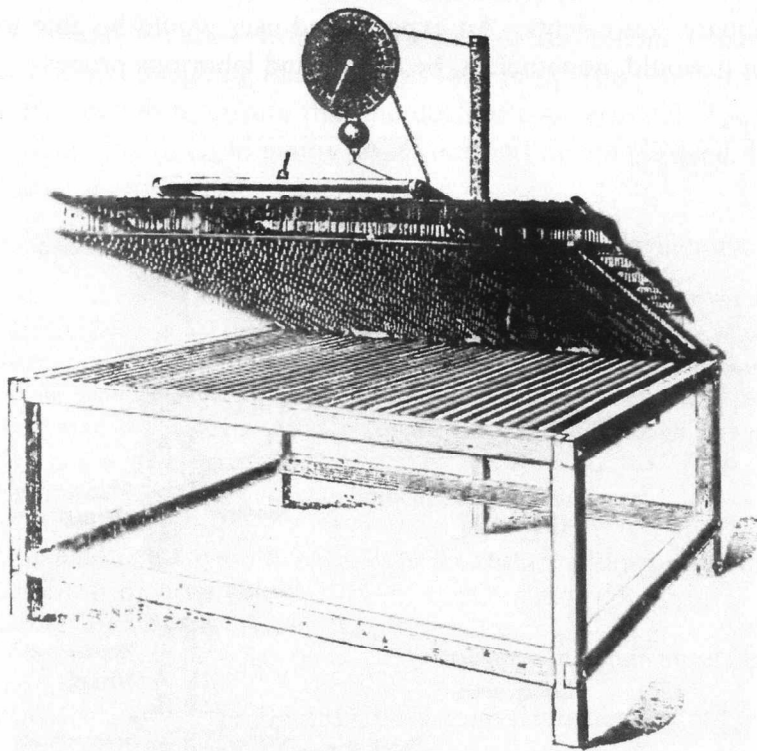


Figure 2. ▲▲

The use of this device would clearly require a skilled operator and, I suspect, would yield only moderately accurate results. An illustration of a pin machine is shown at (Fig 2).

This type of machine was in use in the USA in the mid to late 19th century although, according to a report compiled by one Frederick John Schlink, for the Federal Bureau of Standards at the beginning of the 20th century, the device was no longer being produced by that time, having been superseded by the automated roller type of device. The roller mechanisms became the industry standard measuring instrument until electronic devices, using photo electric cells, were introduced in the 1960s.

The motorised roller type of area measuring machine was widely used in the leather industry throughout the 20th century as it was quick to use and required little operator skill to achieve acceptable results.

Its principle of operation is to 'divide' the hide into strips of known width and measure the

length of each strip as the piece of leather passes through the rollers. A summation mechanism adds up the areas of the strips and indicates the total for the whole hide, on a dial.

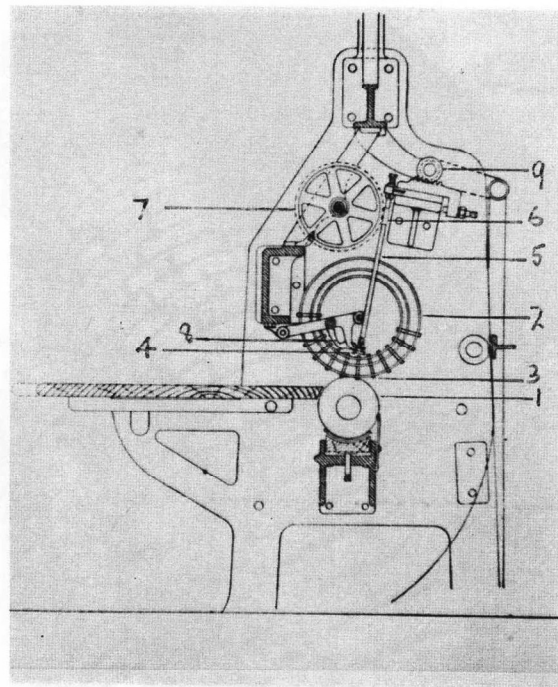
There were variations in the design of these machines but the one mainly used in the UK was the so called 'pin-wheel' type (not to be confused with the 'pin machine' described above).

The principle of operation may be fairly simple but the construction is mind bogglingly complex. It must have required a high level of engineering to make the apparently ramshackle looking device work effectively. It is not, therefore, surprising that German made machines tended to dominate the market both in Europe and the USA.

In the pin wheel machine, the piece of leather being measured passes between two rollers, the lower one being driven by an electric motor. The top roller consists of a number of passive wheels mounted on a common shaft at regular intervals, each one of which only turns when the leather is passing beneath. The circumference of each wheel is studded with a series of loose fitting pins which are lifted as the hide passes beneath that section of the wheel. The inner end of a lifted pin contacts a star wheel mounted on a shaft that is rotated, one tooth at a time as each lifted pin comes into contact with the cog.

The other end of each shaft is connected by gears and chains to a summation mechanism which acts on a weighted lever. The movement of the lever is proportional to the total force being exerted and therefore the number of pin wheels being activated at any moment. When the whole hide has passed through the machine a representation of the total area is thus transferred to the dial indicator by a rack and pinion.

Figure 3 shows a side view of a pin wheel machine and Figure 4 illustrates the array of pin wheels. Figure 5 shows how the totalising mechanism summates the incremental forces from the individual pin wheels. A typical pin wheel machine is shown at Figure 6.



1. Power-driven roller.
2. Measuring wheel.
3. Plunger pin.
4. Star wheel.
5. Short shaft.
6. Worm.
7. Worm wheel.
8. Cam-shaped fixed arm.
9. Fixed pinion.

Figure 3. ▲▲

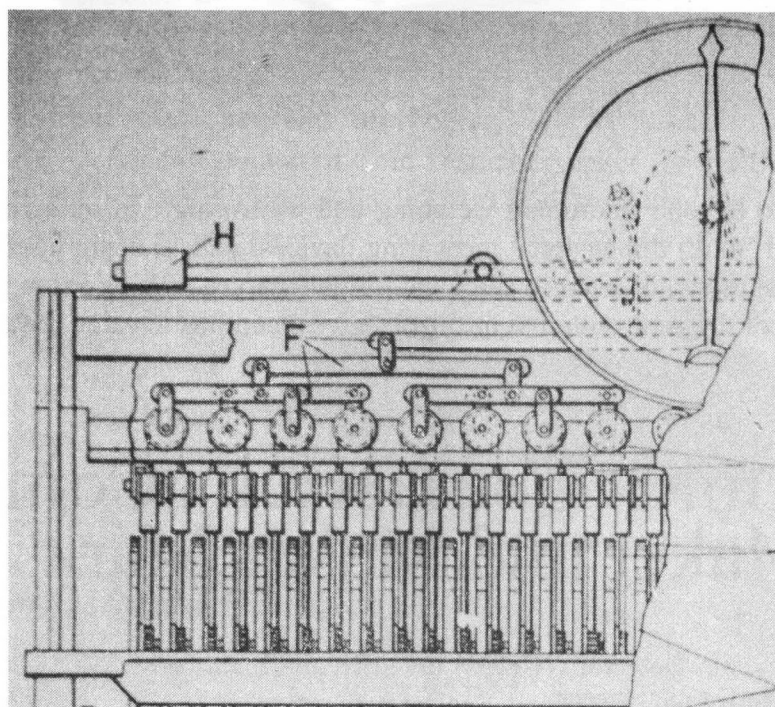


Figure 4. ▲▲

Transactions in leather are trade to trade contracts and, as such, attracted less legal control than consumer transactions. In the UK, leather measuring machines were prescribed devices between the years 1921 to 1963. The method of test required templates of known area, made of a 'rubber fabric' in various sizes from 3 square feet to 30 square feet. The smaller ones were of circular form and the 20 and 30 square feet were rectangular with semi-circular ends. The templates needed to be made with a considerable degree of accuracy and had to be verified by the National Physical Laboratory. The care and maintenance of these templates was clearly a problem for the Weights and Measures authorities and there was a deal of correspondence in the professional journal about how to store these standards and ensure that they remained accurate.

The instruments were de-prescribed when a new Weights and Measures Act was introduced in 1963. It was clearly felt that the obligation to verify and inspect these problematical devices was out of proportion to the need to regulate trade to trade transactions.



Figure 5. ▲▲

There appears to be no other product, sold by area, whose dimensions needs to be ascertained by such complex mechanisms. Most products sold in this way are of conveniently regular form, so that the area can be calculated by simple linear measurement. We therefore, see a unique situation where all this ingenuity and invention has been expended on a single commodity.

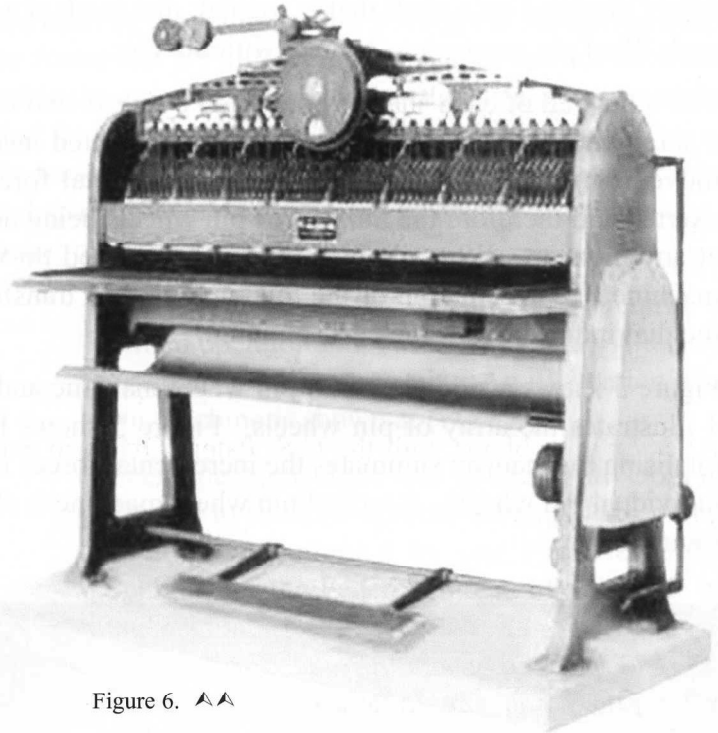


Figure 6. ▲▲

There are other odd measuring devices which go beyond traditional weighing and measuring. In modern metrology we now find the presence of so called 'multi dimensional measuring devices' which, using laser technology, measure the external volume of packages etc, in order to calculate freight charges. We have long seen taximeters which combine the measurement of distance with that of time to give a composite value for a road journey, including the hours stuck in traffic.

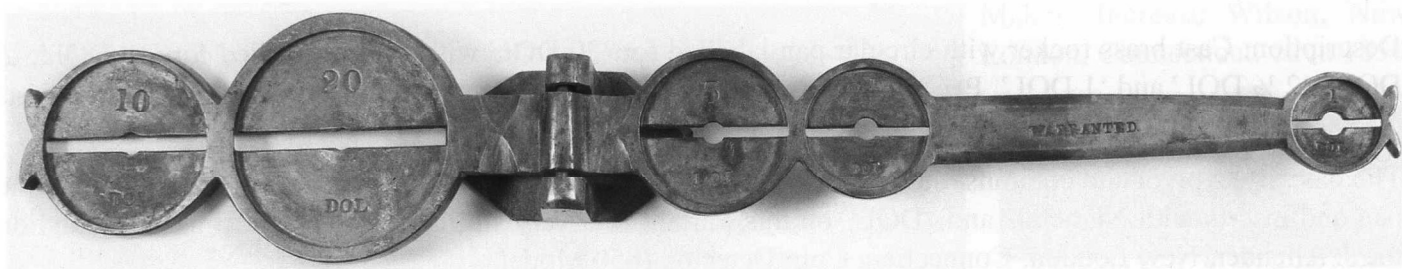
In these days of an increasingly complex view of space and time one wonders where it's all going next.

American Eagle Gold Counterfeit Coin Detectors, A New Maker and Maker Mark

BY MICHAEL FOSTER

In the 1850s, there were a number of Counterfeit Coin Detectors (CCDs) invented and manufactured to test the American Eagle family of the Double Eagle \$20, Eagle \$10, Half-Eagle \$5, Quarter-Eagle \$2½, and the Gold \$1 coins. By 1854, the gold coin family included a second \$1 gold coin with a different diameter and a \$3 gold coin.

One of the best known examples of these Counterfeit Coin Detectors is a series of rocker models invented by John Allender, New London, Connecticut that could test the five and later seven American Eagle gold coins with a single rocker design. The original model had five in-line pans labelled for '10 DOL', '20 DOL', '5 DOL', '2½ DOL' and '1 DOL', with gauge slots. This rocker was introduced in 1850:



Allender 1850 Model

However, Allender didn't manufacture his rocker. He used a local iron and brass manufacturer, Increase Wilson whose name often appeared on the box label of Allender CCDs:



Allender Box Label with the manufacturers name *I. Wilson, New London, Conn.*

"Increase" is a literal translation of the Hebrew name "Yosef" or "Joseph".

Allender's problems with the U.S. Patent Office in eventually obtaining a Patent No. 13,840 for his "Coin Tester" on November 27, 1855, have been well documented in *U.S. Coin Scales and Counterfeit Coin Detectors* by Eric P. Newman and A. George Mallis.

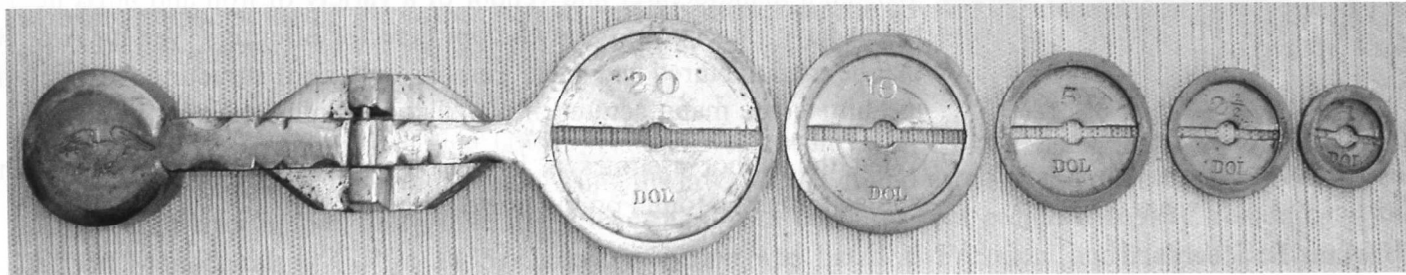
Where things get interesting is in the existence of another pair of American Eagle Gold Counterfeit Coin Detectors that warrant further documentation as their possible maker is discussed. The first of these CCDs is Variant A, a rocker with inserts.

Variant A: Rocker with inserts

An American Counterfeit Coin Detector Rocker for the Double Eagle (\$20 DOL), Eagle (\$10 DOL), Half-Eagle (\$5 DOL), Quarter-Eagle (\$2½ DOL) and the One Dollar gold (\$1 DOL):



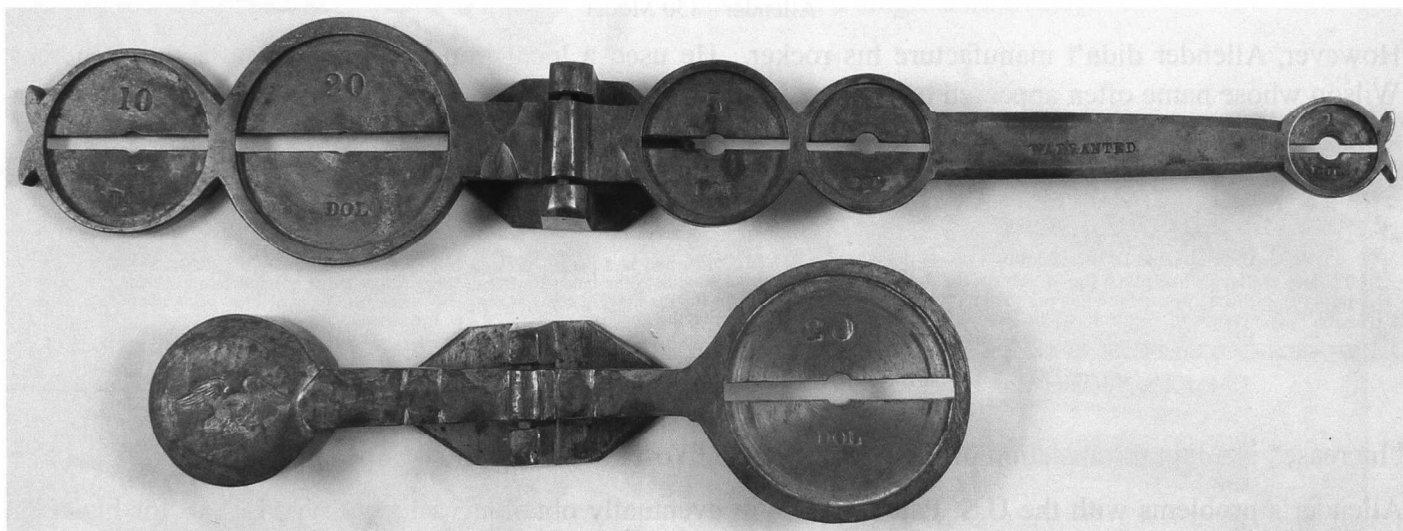
Variant A: American Eagle CCD Rocker with inserts stacked on pan



Rocker with inserts spread out

Description: Cast brass rocker with circular pan labelled for '20 DOL' with inserts labelled for '10 DOL', '5 DOL', '2 ½ DOL' and '1 DOL'. Pan and inserts have gauge slots to check coin thickness. Diameter of coin is checked by pan and insert rims (example is from the Katz Collection).

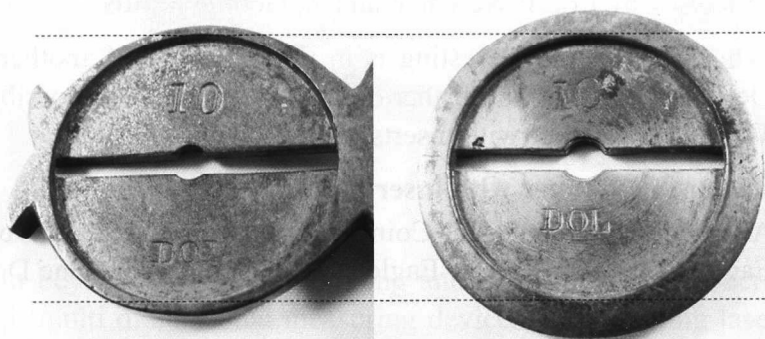
The base style, pivot and columns, the beam decoration, and in particular the size and style of labelling on the pan and inserts with Numerals and "DOL" on this Variant A is very similar if not identical to that found on the J. Allender, New London, Connecticut Coin Detector 1850 Model.



Allender Model 1850 and a Variant A with 20 DOL pan

Comparing the 10 DOL platter on the Model 1850 Allender with the 10 DOL insert from Variant A:

The Variant A CCD rocker with inserts appears to have also been manufactured by I. Wilson, New London, Connecticut.



Allender 1850 Model 10 DOL pan and 10 DOL Insert from Variant A



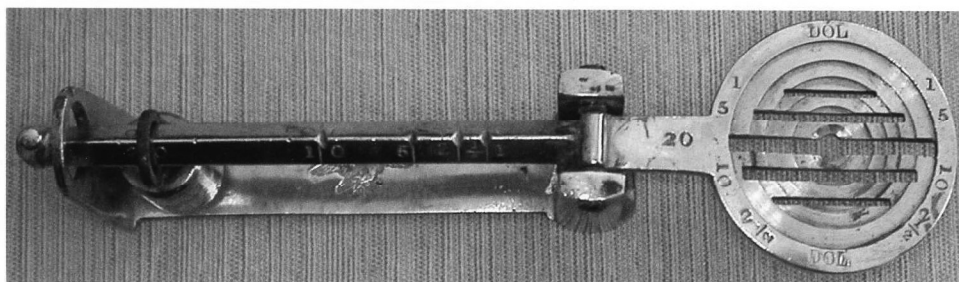
Rocker Poise: Eagle mark with spread wings

By his 1851-3 Model, Allender had moved to all text labelling for the platters. Perhaps to further differentiate his CCD from the Wilson Variant A. Because of the trouble that J. Allender was going through with the U.S. Patent Office it is very unlikely that Allender would have taken this Variant A or the next Variant B to market, whereas Increase Wilson, a manufacturer and vendor of a variety of iron and brass items might have introduced his own coin detector offerings, Variant A & B that he manufactured and sold. Perhaps only until attracting Allender to use him as the manufacturer of his Allender Coin Detectors in 1850.

What the author assumes is I. Wilson's maker mark, an Eagle with spread wings, is found on the poise of the rocker:

Variant B: Steelyard

An American Counterfeit Coin Detector Steelyard for the Double Eagle (20 DOL), Eagle (10 DOL), Half-Eagle (5 DOL), Quarter-Eagle (2½ DOL) and the One Dollar gold (1 DOL):



Variant B: American Eagle CCD Steelyard with rim guides and labelled gauge slots

Maker: Increase Wilson, New London, Connecticut, circa 1850



Steelyard base: Eagle mark with spread wings

Description: Cast brass steelyard with circular pan with rim guides for diameter checking and gauge slots labelled for '20', '10', '5', '2½' and '1' to check coin thickness. Pan labelled with 'DOL' at top and bottom. Beam with movable weight labelled with '20', '10', '5', '2½' and '1' settings (example is from the Beyreis Collection).

I. Wilson's maker mark an Eagle with spread wings found on the base of this steelyard links it to Variant A:



Steelyard beam with movable weight and labels for '20', '10', '5', '2½' and '1'

This Eagle maker mark has never been found associated with an Allender rocker. There is no maker's name to be found on these devices and no record of the devices has

been found in the U.S. Patent Office. For more information see *U.S. Coin Scales and Counterfeit Coin Detectors*, Newman and Mallis, [III-2-12] and [VI-1-3 to 5]

Based on the rarity of the Variant A, currently only three recorded examples, and the Variant B, only one recorded example, it is most likely that Increase Wilson made these CCD Variants for only a short period of time. The introduction in 1854, of a new one dollar gold coin size and the three dollar gold coin made the Variant A and B designs outdated and would have required changes to their designs to support the new coins. These changes were easily accomplished by John Allender in his 7-coin design of 1854. There are no recorded examples of Wilson's Variants for testing 7 coins.

Wilson could have made his 5-coin Variants in the 1849-50 time frame and stopped when he started to manufacture the Allender 1850 Model 5-coin, or he could have continued to make them until 1854, after which 7-coin versions would be required.

So who was Increase Wilson? The firm of Increase Wilson ("I. Wilson") (b. 1785, d. 1861), brass and iron industries situated on Methodist and Washington streets, New London, Connecticut, made tools from 1818 through 1866 at least. Wilson himself held a very early patent for a coffee grinder that dates to 1818.

Following his marriage to Rachel Wright at the beginning of 1810, Wilson manufactured and sold various hardware items, including the coffee grinder, peach pitters, and the Taylor patent braces. By all accounts he was a prosperous man, and is recorded as one of the incorporators of the Savings Bank of New London, in 1827.

His daughter, Ann, married a young lawyer, Nathan Belcher in 1841. Belcher had arrived in New London from nearby Griswold, Connecticut, and tossing his law practice found work helping Wilson run his hardware business and later helped reorganize the Wilson hardware business as a public company, renaming it the "Wilson Manufacturing Co" in 1855. Increase Wilson was listed as President and Nathan Belcher as its Secretary. In 1861 Increase Wilson died, and Belcher became president.¹

The manufacturing companies of New London included The Wilson Manufacturing Company, having a capital of one hundred thousand dollars, with extensive works occupying two full city blocks in the heart of the city, are engaged largely in the manufacture of mowing-machines, brass-work, tools, and other implements.²

INCREASE WILSON HAD FIRST PLANT IN NEW LONDON FOR IRON PRODUCTS

Business Started on a Small Scale Developed Into One of the Largest Manufactories of Its Kind in the Land.

To Increase Wilson belongs the credit of developing the first plant for the manufacture of iron products in the city of New London. Commencing with a small shop, where he, and perhaps one other, toiled with comparatively primitive methods, he worked steadily up, step by step, substituting horse and mule power for the treadle arrangement, and superseding this with steam power; increasing his plant by moving to more commodious quarters, furnishing it with implements and machinery of the latest invention, gathering about him men skilled in the best workshops of New England.

As fast as his capital would allow him, he tore down his wooden buildings and replaced them with brick ones. From the beginning until the end of his career he concentrated all his efforts for the improvement of his plant and its products. At his death, which occurred in the early days of the Civil war, he left, as a man-

was in this shop as late as 1817, as proven by a contemporary deed, but it is probable that he did not remain there much longer, as he was keeping a hardware store in State street in 1820.

On Dec. 24, 1815, he was one of a company of merchants who purchased the Mellally lots in State street. These lots extended from Bradley street west to the store now occupied by J. Fisher. Since that date all the buildings which face State street within that line have been built. Wilson erected the building, which is now occupied, E. H. Caulkins using the lower part as a store for the sale of his hardware products, while the top floor was used as a factory for the manufacture of his goods, and there are many traces in the rooms to show that busy workmen once toiled there.

In the rear of this building Wilson erected a foundry which was of adequate size for his wants. In the year 1825 he leased a piece of land which was north of the rear of his State street lot. Jonathan Sizer, the lessor, gave Wilson a right to construct a building for foundry

which faced Methodist street, the animals were arranged in a circular position, and as they traveled around they turned an upright shaft, which moved the machinery in the different buildings. In his building in State street a foot treadle had been used for power in the finishing room, while horse power was used in the foundry for melting the ore.

Brought First Stationary Engine.

In a few years Wilson brought to this city the first stationary engine and operated his machinery by the most improved method. He doubtless would have had an engine at the start were it not for the fact that his capital was limited, as he had but \$8,000 to start with when he opened his Methodist and Washington street plant. His sales for the first few years ran from \$10,000 to \$15,000, but subsequently outgrew these infantile proportions so much as to have a place in a history of the iron manufactures of the United States.

The following is a quotation from this history, with reference to the Wilson

These pipes extended to Bradley street, where they supplied some stores.

The spring may still be seen under one of the brick buildings of the R. T. Palmer Co., and the reservoir still stands back of the Second Baptist church, where it is crumbling to the ravages of time.

Many men, who afterward branched out as manufacturers, worked for Wilson. Among these were: William Albertson, who was at the head of the Albertson & Douglas Machine Co.; Artemas Douglass of the same company; Peter Galleher and John Comstock of the firm of Galleher & Comstock, who conducted an iron business on the site of the Hopson & Chapin plant; Giles and Leonard Dart, who made coffee mills in Bradley street, and others who settled in various communities.

Among the earliest foremen of the Wilson establishment were Alexander Merrell and William Albertson. Many men worked there, from youth to old age, for they found the place congenial. Wilson, being a practical man himself, knew what a man could do, and knew whether he was doing it right or not. When he received an order for any article, he would sit down and make a pattern of it himself, as well as any of the pattern makers that he employed. The help always had confidence in their quiet employer; they always saw him busy and they followed his example.

Had No Regular Pay Day.

Factories had no regular pay days in those times, though men could get some money on account whenever they wished it, and this rule was applicable at Wilson's. A settlement could be procured at most any time, but the workmen would often let their wages go for a year, only drawing enough to pay their pressing bills. It is said that many a mechanic found this an easy way of building a home for himself, and many dwellings were erected and paid for with the accumulation of the yearly earnings, and many declared that if they had the money oftener they would spend it and would have none left to pay for a home.

Wilson took no active part in politics, but showed considerable interest in the Free Soil movement, attaching himself to its principles. He was made an elector of New London in 1813.

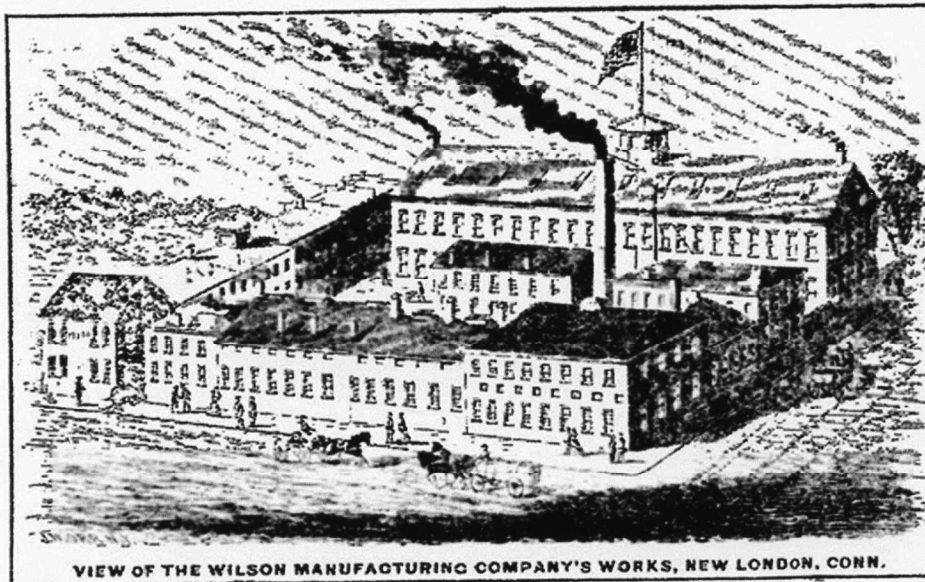
He became connected with the militia of Connecticut at an early age, and was commissioned colonel of troops stationed at New London, June 1, 1813, and this made the people of this city refer to him as 'Colonel Wilson.'

A deeply religious man, he led a most blameless life and his virtues entitled him to the respect of the entire community, where not a person could be found to say unpleasant things about him. He joined the First Congregational church in 1817, and from that time until his death he attended with a regularity which was characteristic of him in his secular affairs.

On Jan. 1, 1810, Increase Wilson was married to Rachel Wright Fox, daughter of Mr. and Mrs. Ezekiel Fox of this city, who bore him five sons and six daughters.

Son a Brilliant Man.

Of the five sons, three grew to manhood, the other two dying in infancy. George C., the eldest of the surviving sons, was associated with his father. He was a brilliant man, of fine address, and of strong intellectual and executive ca-



References:

The DAY, Saturday, Feb. 13, 1904.³

1. Taylor Patent Brace: <http://www.sydnesslout.com/brace/Taylorb.htm>
2. *History of New London County, Connecticut, with Biographical Sketches of Many of its Pioneers and Prominent Men.* Compiled under the Supervision of D. Hamilton Hurd, J. W. Lewis & Co., Philadelphia, 1882. Press of J. B. Lippincott & Co., Philadelphia, Chapter XV: <https://archive.org/details/cu31924028841951>
3. *The Day*, Saturday Afternoon, February 13, 1904: <http://news.google.com/newspapers?nid=1915&dat=19040213&id=jswiAAAIBAJ&sjid=DnMFAAAAIBAJ&pg=5656,3824000>

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The author wishes to thank Jerome Katz, Kurt Beyreis and Jan Berning for their assistance in this article.

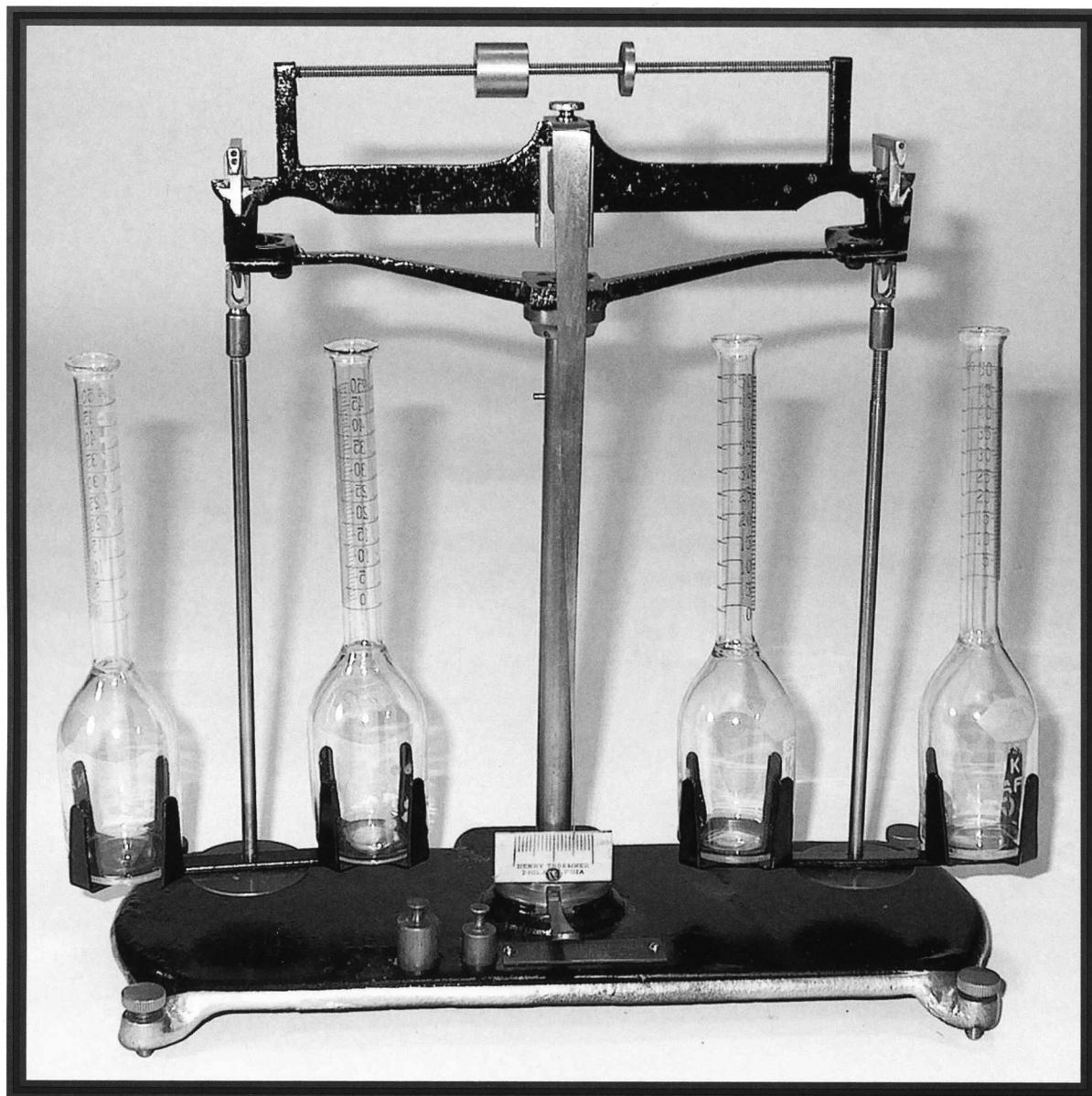


EQUILIBRIUM[®]

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2015 ISSUE NO. 3

PAGES 4161 - 4188



Cover Picture

This Cream Testing Balance was included in Henry Troemner's scale catalog, where it was described as *the only satisfactory 4 bottle cream testing balance. This line of balances, because of its style of construction (load supported below the knife-edges, the only satisfactory and stable method of construction for balances requiring a constant accuracy) will be found to be the only all-around accurate and satisfactory balance for cream testing.* It has knife edges of tempered steel, polished agate bearings, rotating bottle racks, screw leveling feet and unleakable levels. Troemner's Model 6604, it sold for \$26.75 in 1915-1926, and included 9 and 18 gram weights to use with 9 and 18 gm Babcock bottles.

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

The Lindermans of Amsterdam 3 BY STEPHEN BARNETT

The first two parts of this article recounted how I became interested in learning more about the Lindermans, the challenge of attributing their scales to a particular member of that family and determining the approximate date of the scale. We are comparing ten diamond and coin scales to determine what features and information on them can help with this attribution. Thus far, we compared features of the scale boxes, the beams and pans as well as the accessories that came with them. In this part, we continue the comparison by examining the weights that came with the scales, the markings on coin scale boxes and the labels on the inside of the box lids.

The Weights

Carat

Carat weights are brass, square with tapered sides. The weight value is on the top of the weight and is surrounded by a decorative circle. My first diamond scale, D-1, has the 64 and 32 carat weights and individual compartments for the 16, 8, 4 and the three smaller carat weights. (Figure 42)

Since my other diamond scales also have the smallest weights missing, I had assumed, incorrectly, their values to be 2, 1 and $\frac{1}{2}$ carat. However, the Abraham Groengraft diamond scale has the complete set of weights plus 2 and 4 grain sheet weights. The small ones are marked 3, 2, and 1. (Figure 43) The half carat weight may have been too small to make as a square tapered one. Perhaps it was a sheet weight instead.

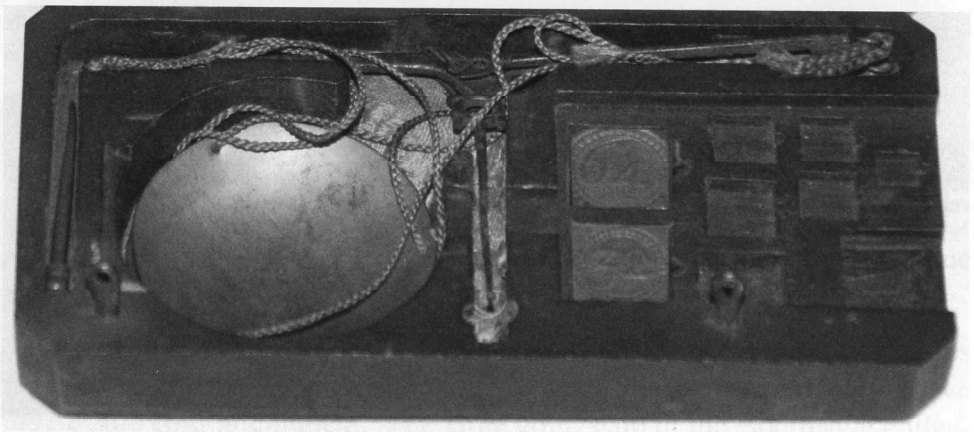


Figure 42. ▲▲ 64 and 32 carat weights of Linderman diamond scale D-1.

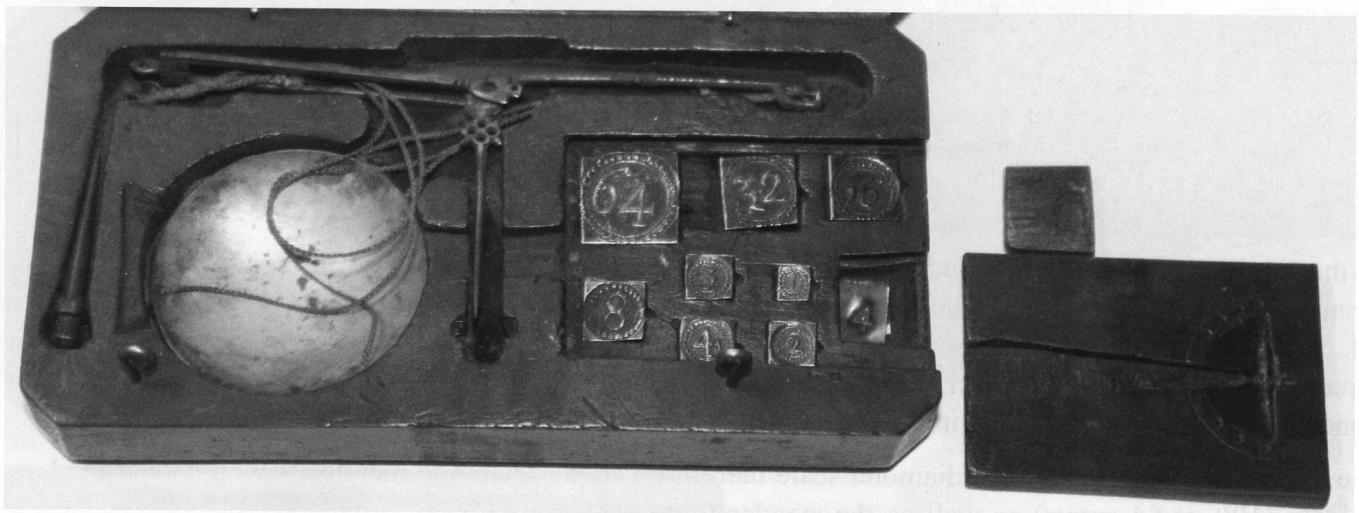


Figure 43. ▲▲ Groengraft diamond scale D-5 showing full set of carat weights.

In addition to the *standard* set (32 carats through 1 carat) that D-3 (Figure 44) has, some also came with larger weights. D-1 (Figure 42) and D-5 (Figure 43) also have a 64 carat weight and the set from 32 carats to 1 carat. D-2 (Figure 45) and D-4 (Figure 46) have a 100 and a 64 carat weight in addition to the *standard* set. The explanation for this variation is the way that diamonds have always been sold either at the wholesale or retail level. The selection of weights in the scale suggests the business that the owner was in: diamond merchant (wholesale) or jeweler (retail).

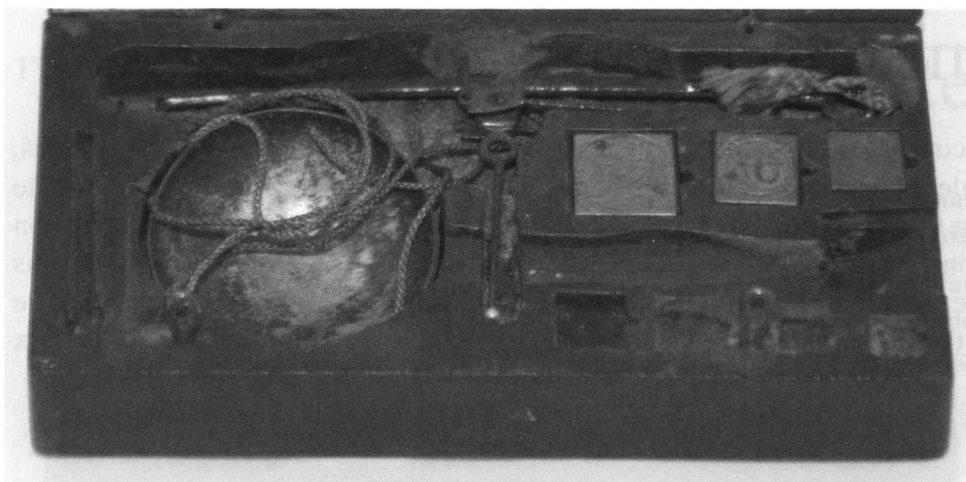


Figure 44. ◀◀ Diamond scale D-3 includes a *standard* set of weights with 32 carats being the largest.

Figure 45. >> The weights of Linderman diamond scale D-2 include 64 and 100 carat weights.



Figure 46. ◀◀ Diamond scale D-4 includes 64 and 100 carat weights.

At the wholesale level, the diamond merchants offered¹ their diamonds in parcels containing diamonds of different weight, size and quality. The purchaser is offered one parcel. If he declines, he is offered a second parcel. If he declines that one, he is offered a third and final parcel. If he declines that one, there are no further parcels offered. At the retail level, the jeweler sells the diamonds individually or in small parcels of matched stones, which are to be mounted in a piece of jewelry.

The size of weights needed in a diamond scale therefore varies. Diamond merchants would need the larger weights (100 or 64 carats) as well as the standard set because they were buying or selling larger weight parcels. The jewelers would only need the standard set because they were dealing with individual stones or lower weight sets of matched stones. Therefore, the scales with the larger weights (D-1, D-2, D-4 and D-5) were probably made for and sold to diamond merchants. D-3 was probably made for a jeweler.

Figure 47, taken from Reference 2 (page 139), shows the different designs of carat weights made in Amsterdam in the 17th and 18th centuries. The design on the carat weights in the Johannes Linderman scales (value of the weight in a circle – second weight from the left in Figure 47) was used in Amsterdam starting in the 17th Century. Willem Linderman's carat weights ca 1830, had a different design (middle weight in Figure 47).



Figure 47. << Style of the different markings on Amsterdam and Antwerp made carat weights.

Afb. 242. Oude karaatgewichten. v.l.n.r.: Amsterdams ± 1780, Amsterdams 17de eeuw, Amsterdams W. Linderman ± 1830, Antwerpen 17de eeuw, Antwerpen 18de eeuw.

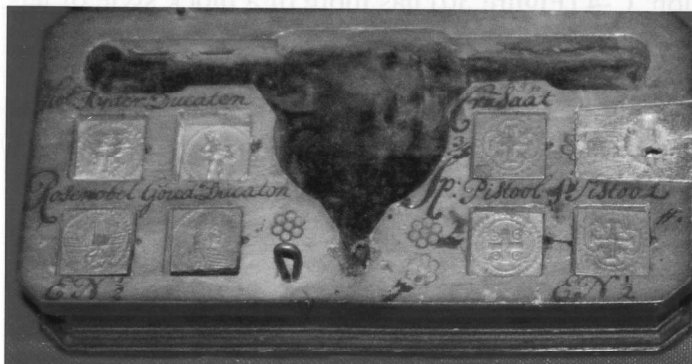


Figure 48. >> Linderman Coin Scale weight set C-2 showing weight drawer.



Coin Weights and information about them on the labels and cases

The coin weights are all made of brass. They are square with tapered sides. The design on the top is unique to each coin. The underside of the weight may contain a stamped mark indicating who made the weight.

To ensure that the proper weight is chosen when a coin is to be weighed, the labels for the larger coin scales (C-2, C-3 and C-4) (Figures 69, 70, and 71) have drawings of the weights with the name of the coin above each drawing and the equivalent value of the coin in Guilders. The large coin scale in the Boerhaave collection has the same label (Figure 58), even though there are thirteen weight compartments in the top level of the box. The ISASC collection also includes a Linderman Coin Scale which has the same label (Figure 61), with the same address, and the same weight arrangement as C-2 and C-3. (Figure 51) It seems likely that Johannes Linderman used the same label for his coin scales regardless of the number of weights that came with the scale.

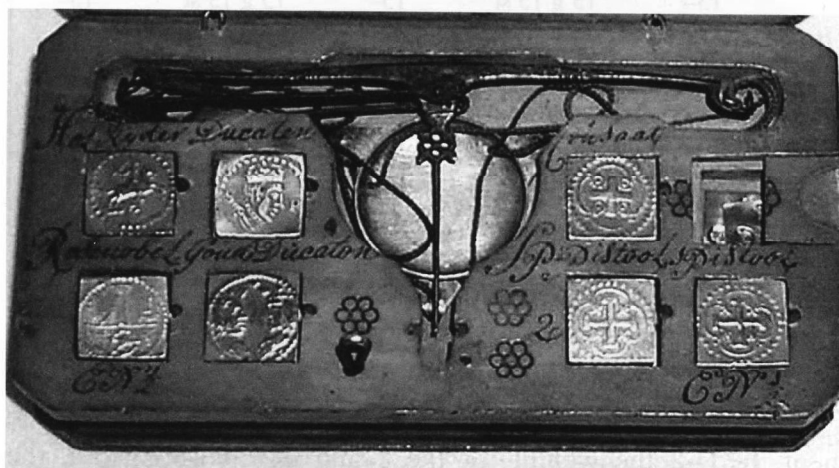


Figure 49. << Weight arrangement of a large Linderman coin scale set C-3 showing position of weight drawer.

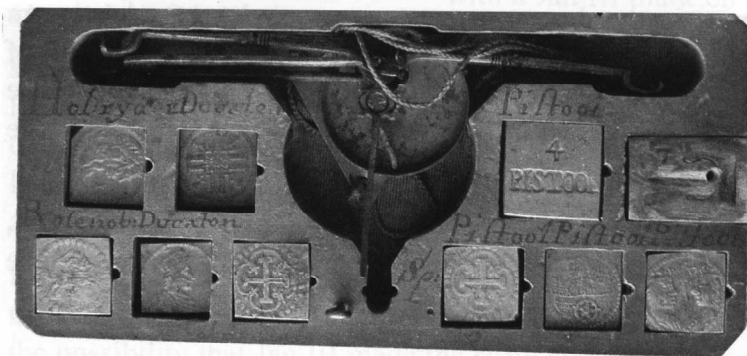
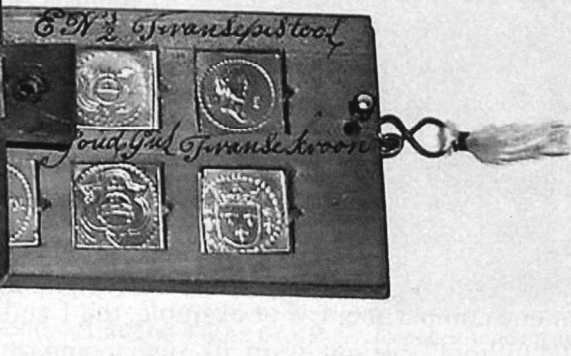


Figure 50. >> Weight arrangement for Linderman coin scale C-4 showing the weight drawer.

Around the compartment for each coin weight is written the name of the coin and which of the denominations of coin are in the compartment. A visual comparison of the writing on the large coin scales reveals subtle differences between C-2 and C-3 in some of the letters (Figure 48 and Figure 49). This suggests that the writing was done individually for each scale either by the same scribe, or by different scribes who copied the same thing. However, as Joe Lenorovitz noted in his description, C-4 (Figure 50) has more of a block style of letters. So, presumably it was done by a different scribe.

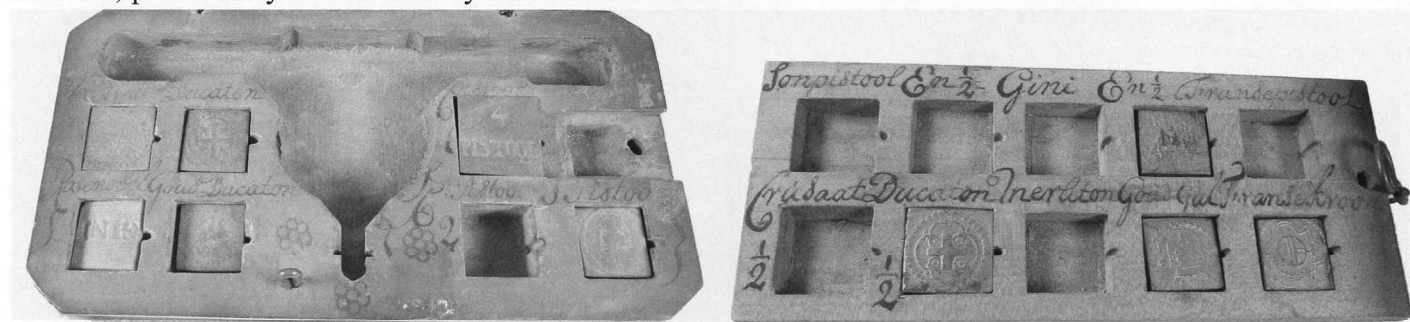


Fig 51. ▲▲ The Linderman coin scale in the ISASC collection has two weight trays with the weights shown on the label.

There is very little difference between these samples of large coin scales. It seems likely that at least for these coin scales, the Lindermans used the 18th Century version of mass production, and had a supply of them made and ready for sale, rather than making them to order.

In some cases, the exchange value of the foreign coin against the Dutch Guilder is also written on the label. Dr. Wittkop Koning in an article that he wrote about the Lindermans (Reference 1) included information about the exchange value of various foreign coins against the Dutch Guilder during the time that each of the Lindermans was in business. (Figure 52³) As we shall see, this can be helpful in attributing and dating the coin scales.

Uit de verschillende etiketten is het volgende lijst van waarde op te stellen:					
	Jan Linderman Singel —1752	Jan Linderman O.Z. Achter- burgwal 1752—1758	Hendrik Linderman Nieuwendijk 1744—1785	Jan Linderman Kalverstraat 1764—1785	Jan Linderman Nieuwendijk 1785—1805
Roose Nobel	11—	11 g 11 st	11—	11 g 11 st	11—
Ducaton	15—	15 g 15 st	15—	15 g 15 st	15—
Hol. Reyder	13—	13 g 13 st	13—	13 g 13 st	14—
Ducaat	5—	5 g 5 st	5—	5 g 5 st	5—
Goud. Guld.	4—	4 g 4 st	4—	4 g 4 st	4—
Merliten	9—	9	9	9	9
Cruysaat	15—	15—	15—	15—	15—
Son Pistool	11—	11 g 11 st	11—	11 g 11 st	11—
Gini	11—	11 g 11 st	11—	11 g 11 st	11—
2 Pistool	18—	18 g 18 st	18—	18 g 18 st	18—
Carolus	12—	12 g 12 st	12—	12 g 12 st	12—
1 Pistool	9—	9 g 9 st	9—	9 g 9 st	9—

Figure 52. ▲▲ Conversion Rates Foreign Coin to Guilder.

To save space and to have the weights for the full and fractional sizes of the coins, the weights were stacked in one compartment. For example, the 1 and ½ “PiStool” (Pistole) weights are in the same compartment. The 2 “PiStool” weight is in its own compartment. In D-3 the weight for the 1 and the ½ Lonpistool, the Fransepistool (Louis) and the Fransepstroon in the set in the drawer are not represented on the label. As observed earlier, it seems likely that one version of the label was lithographed and colored and used on all of the scales with this size case. If the buyer of the scale needed weights for other coins in circulation, they were included in the set but not shown on the standard label. So the real information about which coins are in the case is from what is written around each of the weight compartments.

Knowing what these coins were, their value against the Guilder, when they were introduced into circulation, and when they were withdrawn from circulation might also help to date the scale and which Johannes made it. Further research is needed to explore this line of investigation.

Maker Marks on Coin Weights

The marks found on the underside of some of the coin weights provide another bit of information about the scale. As far as I can tell the carat weights did not have such marks; at least the samples that I have do not contain such marks. In an email to me, Diana Crawford-Hitchins wrote:

They (the Lindermans) were also adjusters for the city of Amsterdam, so were trusted for their accuracy and probity. You can tell they were adjusters because, as a badge of office, they could use the arms of the city with their initials on each side. (L, Arms with three crosses in a vertical line, M) or (H, Arms, M).

In Reference 2, Koning and Houben have drawings of the marks used by Johannes Linderman (II), Hendrik Linderman and Johannes Linderman (III) (Figures 53, 54 and 55). (An interesting question is: Did the two Johannes' use L and M on their marks rather than J (or I) and L because an earlier maker had already used J and L for their mark?) Note the presence of the dot over the L in Jan III's mark to distinguish his mark from that of Jan II. In our sample of scales, we have found the Johannes' marks on coin weights. Figure 56 shows the mark for Jan III, with the dot above the L, on the back of a coin weight in scale C-3. Many of the weights in C-2 have the Jan II mark on the underside.



Figure 53. ▲▲ Johannes Linderman (II) maker's mark.



Figure 54. ▲▲ Hendrik Linderman maker's mark.



Figure 55. ▲▲ Johannes Linderman (III) maker's mark.



Figure 56. ▲▲ Johannes Linderman III maker's mark on the back of a coin weight from coin scale C-3.

Figure 57 is Jan III's mark on the back of a coin weight in scale C-1. The capital "L" stamped over the maker's mark indicates the year in which this weight was verified. Reference 2, on page 57, has a table of verification letters used in each year. This style of "L" was used in 1777. (A slightly different style "L" was used in 1752.)

While the presence of the maker's mark alone might help to link the scale to the correct Johannes, it is not guaranteed. A scale with a Jan III mark on the weights is likely to have been made by him. However, the



Figure 57. ▲▲ Johannes Linderman III maker's mark on back of coin weight from coin scale C-1.²

scale could have been made by his father or uncle and the original marked weight, which may have been missing, replaced with a Jan III weight. Jan III may even have marked a previously unmarked weight once he determined that it was of the correct weight. (C-3, Figure 49, may be an example of this. As we will learn later, the scale label (Figure 70) is Jan II, and the weight has the Jan III maker's mark (Figure 56). There is a dot above the L.)

If we were to find a scale that has a Jan II marked weight in it and no additional information for example from the label, it seems likely that Jan II made the scale too. The uncertainty of the scale's provenance is only from the possibility that Jan III made the scale and reused a weight that his uncle had made and marked.



Figure 58. ▲▲ Boerhaave Museum's large Johannes Linderman coin scale with thirteen weights in the top tray.

As another uncertainty of attribution from the maker marks alone, consider the Johannes Linderman coin scale in the Boerhaave collection (Figure 58):

Signed on box: Dese gewigte warden gemaekten verkogt bij Johannes Linderman op de Beurs en in de Kalverstraat naast de kerk de Papegay in de Goud Balans tot Amsterdam.

Signed on a few weights: makers sign of Johannes Linderman

Signed on one weight: makers sign of Guiliam de Neve, 1609

Signed on one weight: makers sign of Wouter Koenen, ca. 1612

Probably signed on 3 weights: makers sign "AG" (= Abraham Groengraft)⁵

This is an example of a coin scale made by Johannes Linderman that contains weights that were made and marked by makers over 100 years earlier. This appears to be the ultimate in recycling.

In the reverse direction, the Boerhaave Museum has in its collection a coin scale made by Jacob Listingh in 1656, which contains a weight with Jan Linderman's mark. (Figure 59):

Signed on the balance: maker's mark of Jacob Listingh

Signed on box: Gemaact door Jacobus Listingh in't here Logement t' Amsterdam 1656

Signed on 20 weights: maker's mark of Jacobus Listingh

Signed on one weight: maker's mark of Guiliam de Neve

Signed on two weights: maker's mark of Jan Linderman

Apparently, this scale remained in use for over 100 years and two of the weights were replaced by Jan Linderman. The original weight may have been lost or damaged to the point where it was no longer accepted as accurate.

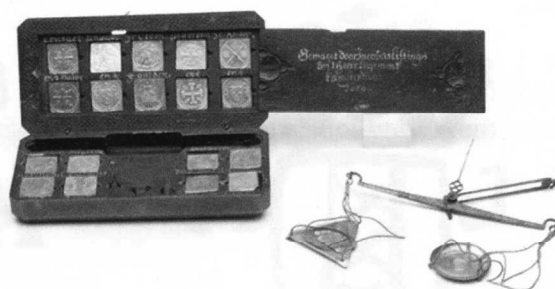


Figure 59. ▲▲ Jacobus Listingh coin scale ca 1656, containing weights with Jan Linderman's maker's mark (Boerhaave Museum); note location of weights in the box lid.

For these reasons and examples we conclude that the presence of a weight with a maker's mark is not a reliable indicator of when the scale was made or by whom. It is even possible that an owner of the scale or an antique dealer added a weight from another maker or another period just to make the scale useable or make the box appear complete.

The Labels

With the exception of the coin weights, there appears to be little information from the boxes and the scales themselves to identify which Jan Linderman made the scale set. Fortunately, the labels contain enough information to help with the identification.



Figure 60. ▲▲ Label of Ioannes Linderman diamond scale D-1 showing additional of coloring of lions' tongues.

The labels are hand colored lithographs. In his July 24, 2009 email to me, Jaap Visser said *in the Netherlands we have the "rule" that a coloured label is 18th Century*. As an indication that the labels for the Jan scales were hand colored, the colorist for the label of D-1 got bit fancy and decided to add the red color for the lions' tongues (Figure 60). The other diamond scales have the same emblem

and label designs, but without the colored tongues. The ISASC collection also includes a Linderman Coin Scale which has the same label, (Figure 61) with the same address, and weight arrangement as C-2 and C-3. Note that the label on this one has some added coloring to the design at the top of the door lintel which the other labels lack. By the time that Willem was making scales, the labels became much plainer. (Figure 62)

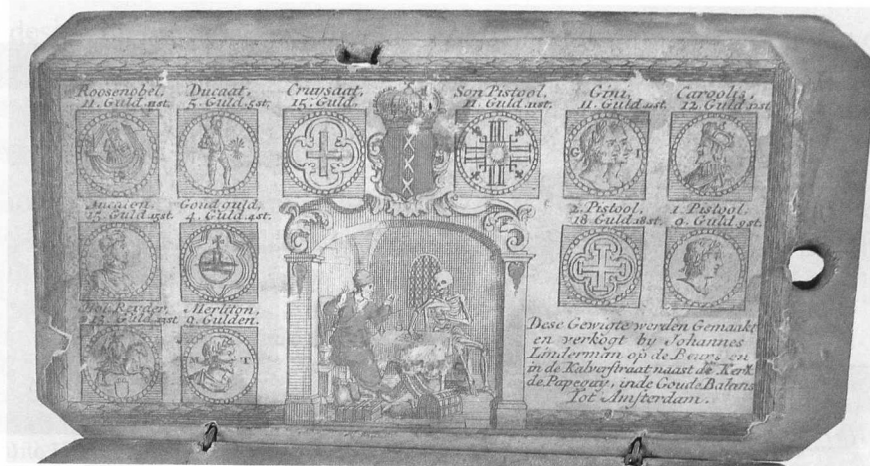


Figure 61. ▲▲ Label of Johannes Linderman coin scale in ISASC's Collection. Note the additional coloring on the door lintels not present on similar scales with the same label.

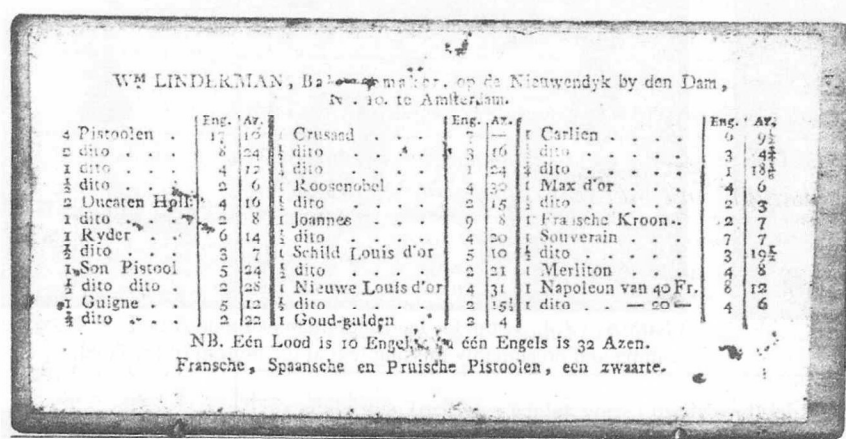


Figure 62. ▲▲ Willhem Linderman coin scale black & white printed label.

anomaly. The labels all contain the central part of the emblem for Amsterdam Coat of Arms (Figure 64) similar to the maker marks on the back of the coin weights.

Most importantly, for attributing a scale to a Jan, the labels contain the maker's name and business address. (See Figures 61, 63 and 65 through 71.) But, this is where we also see the spelling variants of Johannes and various combinations of the name variants and addresses. D-1 and C-4 have the same address on the label, but the diamond scale was made by Ioannes Linderman and the coin scale was made by Johannes Linderman. D-2 was made by Jan Linderman at a different address from the other scales. D-4 was also made by Jan Linderman, but the address across the bottom edge of the label is missing. Presumably it was the same address as D-2. C-2, C-3, C-4 and the ISASC coin scale were all made by Johannes Linderman, but at different addresses. [This is because Johannes, Jan and Ioannes are the same person using the two languages then current in the Netherlands.]



Figure 63. ▲▲ The label for Ioannes Linderman diamond scale D-3. fits the box lid exactly.



Figure 64. ▲▲ Amsterdam Coat of Arms.



Figure 65. ▲▲ Label of Ioannes Linderman diamond scale D-1.



Figure 66. ▲▲ Label for Jan Linderman diamond scale D-2.



Figure 67. ▲▲ Label for Jan Linderman diamond scale D-4. Note the comma and presumably missing text at the bottom of the label.



Figure 68. ▲▲ Label for Abraham Groengraft diamond scale D-5.



Figure 69. ▲▲ Label for Johannes Linderman coin scale C-2.

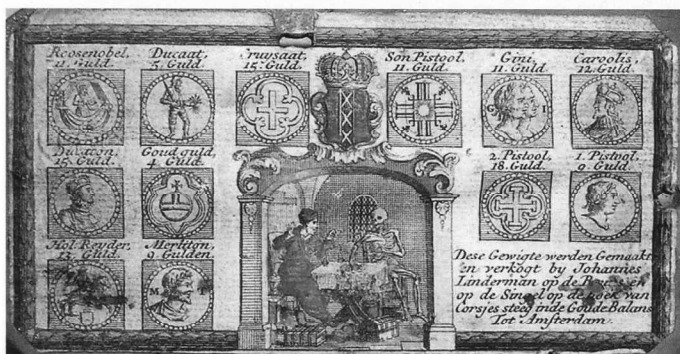


Figure 70. ▲▲ Label for another Johannes Linderman coin scale C-3.



Figure 71. ▲▲ Label of Johannes Linderman coin scale C-4.

Interestingly, D-1 and D-3 have the same design on the label, use *Ioannes Linderman* for the maker, but have different addresses. This suggests that he may have used the same label, and simply changed the address on the lithograph plate. Perhaps they left the address part of the plate blank and had a separate plate for the address.

Hopefully, we will find that the combination of business address and spelling variants helps to link the scale to the Jan who made it, and when he made it. The following table provides the content of the labels in Dutch and a rough English translation for each of the scales that we have examined:

Table 4 -- Addresses on Scale Labels

Scale Identifier	Label Address
D-1 (Figure 65)	Dese Gewigte werden Gemaakt en Verkogt by Ioannes Linderman op de Beurs en in de Kalverstraast naach de Kerk de Papegay inde Goud Balans Tot Amsterdam
	This scale was (or these scales were) made and sold by Ioannes Linderman at the Exchange ⁸ and in the Kalverstraat ⁹ beside the Parrot Church ¹⁰ in the Gold Balance ¹¹ in Amsterdam
D-2 (Figure 66)	Deze Gewigte werden Gemaakt en Verkoot te Amsterdam by Jan Linderman Op de Nieuwendyk het Tiende huys van de Dam en op de Zaal baven de Beurs
	This scale was (or these scales were) made and sold in Amsterdam by Jan Linderman at the tenth house from the Dam ¹² on Nicuwendyk and at the room above the Exchange.
D-3 (Figure 63)	Dese Gewigte werden Gemaakt en Verkogt by Ioannes Linderman op de Beurs en op de Singel ¹³ op de hoek van de Corsjes-Steeg inde Goud Balans tot Amsterdam
	This scale was (or these scales were) made and sold by Ioannes Linderman at the Exchange and on the Singel at the corner of Corsjes-Steeg (Corsjes Alley or Lane perhaps) in the Gold Balance in Amsterdam
D-4 (Figure 67)	Deze Gewigte werden Gemaakt en Verkogt te Amsterdam BY JAN LINDERMAN,
	This scale was (or these scales were) made and sold in Amsterdam BY JAN LINDERMAN, ¹⁴
D-5 (Figure 68)	Dese Gewigten werden Gemaect by Abraham Groengraft Eyck M ^r ge. van Hollande en Westvrieslandt inde Kalverstraet tot Amsterdam ¹⁵
	This scale was made by Abraham Groengraft (Eichmaster or Inspector for Holland and West Freisland) in the Kalverstraet ¹⁶ in Amsterdam
C-2 (Figure 69)	Dese Gewigte werden Gemaakt en verkogt by Johannes Linderman op de Beurs en op de Singel op de hoek van Corsjes steeg inde Goude Balans Tot Amsterdam
	This scale was (or these scales were) made and sold by Johannes Linderman at the Exchange and on the Singel at the corner of Corsjes Lane (or Alley) in the Gold Balance in Amsterdam
C-3 (Figure 70)	Dese Gewigte werden Gemaakt en verkogt by Johannes Linderman op de Beurs en op de Singel op de hoek van Corsjes steeg inde Goude Balans Tot Amsterdam
	This scale was (or these scales were) made and sold by Johannes Linderman at the Exchange and on the Singel at the corner of Corsjes Lane (or Alley) in the Gold Balance in Amsterdam
C-4 (Figure 71) and the Linderman scale in ISASC Collection (Figure 61)	Dese Gewigte werden Gemaakt en Verkogt by Johannes Linderman op de Beurs en in de Kalverstraast naast de Kerk de Papegay inde Goud Balans Tot Amsterdam ¹⁷
	This scale was (or these scales were) made and sold by Johannes Linderman at the Exchange and in the Kalverstraat beside the Parrot Church in the Gold Balance in Amsterdam

Concluding Remarks

What we have learned about the weights, the maker's marks on them, and the labels on the cases show promise of allowing us to do the attribution and approximate dating of the scales. The next Part of this article provides further information about the Lindermans, which when combined with the information we have from our samples will allow us to complete our goal of determining which Linderman made the scale and approximately when.

Notes:

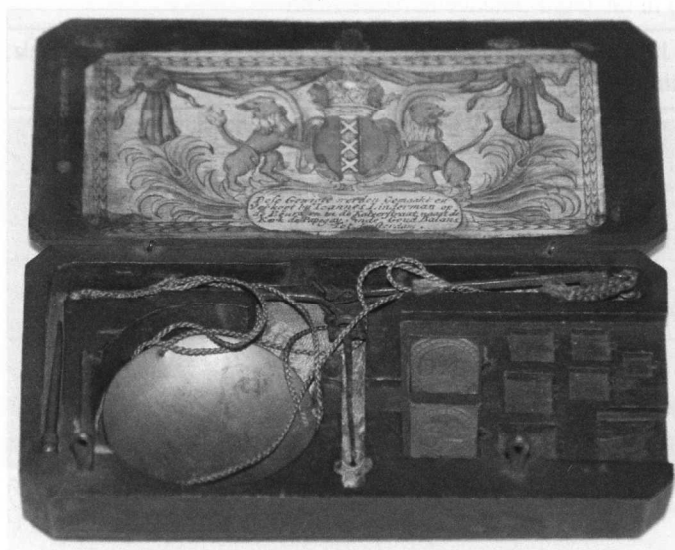
1. This process is used today and is unchanged from what was done in the 18th Century.
2. Reference 2's caption for Figure 242 on page 139 - See Figure 47.
3. In the table, g=guilder and st=stuiver. From Wikipedia: The stuiver [stœy.vər] was a pre-decimal coin used in the Netherlands. It was worth 16 penning or 8 duit. Twenty stuivers equaled a guilder. It circulated until the Napoleonic Wars. After the conflict, the Netherlands decimalized its guilder into 100 cents. Two stuivers equaled a dubbeltje - the ten cent coin. After the decimalization of Dutch currency, the name "stuiver" was preserved as a nickname for the five-cent coin until the introduction of the euro. The word can still refer to the five euro cent coin, which has almost exactly the same diameter and color.
4. I had originally thought that these marks indicated who verified the accuracy of the weight. However, in his February 2015 email to me, Ritzo Holtman said that the Lindermans *were makers, not verifiers*.
5. Quoted from the description of the scale on the Boerhaave Museum website.
6. Apparently some of the makers put their mark on the beam too.
7. Quoted from the description of the scale on the Boerhaave Museum website.
8. The Exchange was created in 1602 by the Dutch East India Company for trading in its stock.
9. Kalverstraat and Nieuwendyk are two of the main streets in this part of Amsterdam. They enter Dam Square (Dam) on opposite sides of the square.
10. Wikipedia provides the following information. De Papegaai is the lesser of the two parochial churches in the St Nicholas Roman Catholic parish in Amsterdam. The church is dedicated to Saints Peter and Paul. It is nicknamed "De Papegaai" (The Parrot) because it was originally hidden in a garden behind a regular house front that belonged to a bird-trader in the days when Catholicism could not be practiced publicly. Today there is a narrow, Neo-Gothic facade flanked by statues of St Joseph and a perched parrot. The church is on the busy Kalverstraat, just south of Dam Square, and invites people in for quiet, as well as celebrating Sunday masses in Latin and with Gregorian chant.
11. In an email to me, Diana said that the "Gold Balance" was the name of their shop.
12. Also known as Dam Square.
13. This could either refer to the Singel canal or the street that runs along the canal.
14. The label is the same as that of D-2. There may have been additional address information along the bottom of the label which is no longer there, hence the comma after Linderman. Presumably it was the same address.
15. The label is difficult to for me to translate completely with online translation software. It also includes a verse from the New Testament Romans Chapter 2 verses 12, 13, 14 and 15. The source of the verse is written around the center of the text on the label.
16. Probably this is a variant of Kalverstraat.
17. The address is the same as on the label of D-1 but the spelling of his first name changes from Ioannes to Johannes.

References

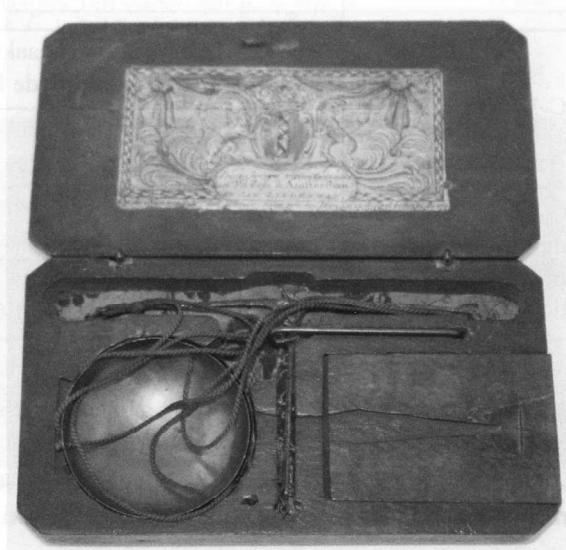
1. *De Amsterdamse balansmakersfamilie Linderman* by D.A. Wittop Koning published in Jaarboek Koninklijk Nederlands Genootschap voor Munt- en Penninkunde, 1951 (38, pp.122-126)
2. *2000 Jaar Gewichten In De Nederlanden* by D.A. Wittop Koning and G.M.M. Houben 1980.

Acknowledgements

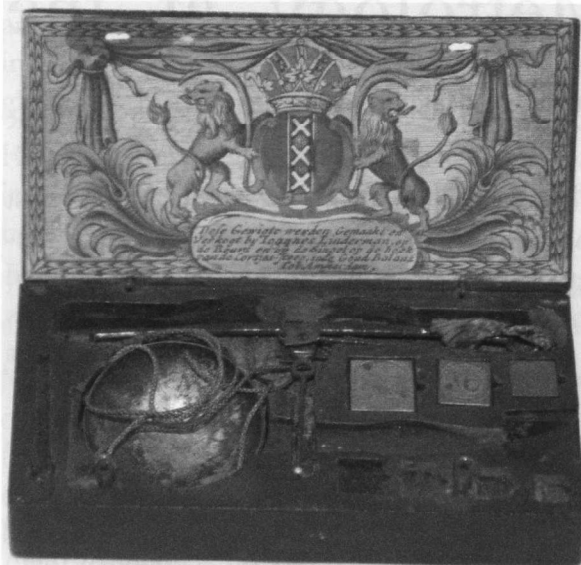
I am grateful to Diana Crawforth-Hitchins and Jaap Visser for helping me with the translations of the labels and of the references, particularly with the terminology unique to scales and weights, and with putting the proper context into the literal translations provided by the on-line translator that I used.



D-1. <<



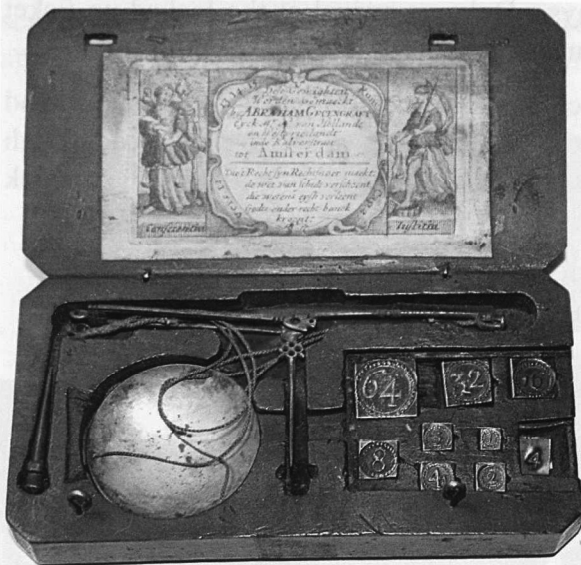
D-2. >>



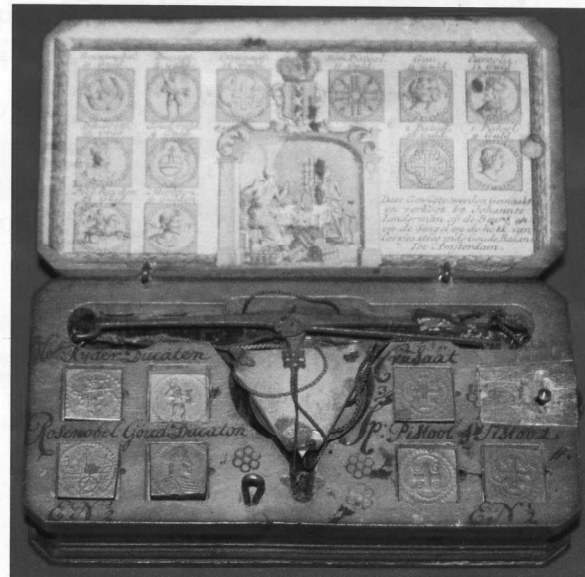
D-3. <<



D-4. >>



D-5. <<



C-2. >>



C-3. >>



C-4. >>

Exhibits Relevant to Metrology at the Zwinger Palace in Dresden

BY THOMAS ALLGEIER

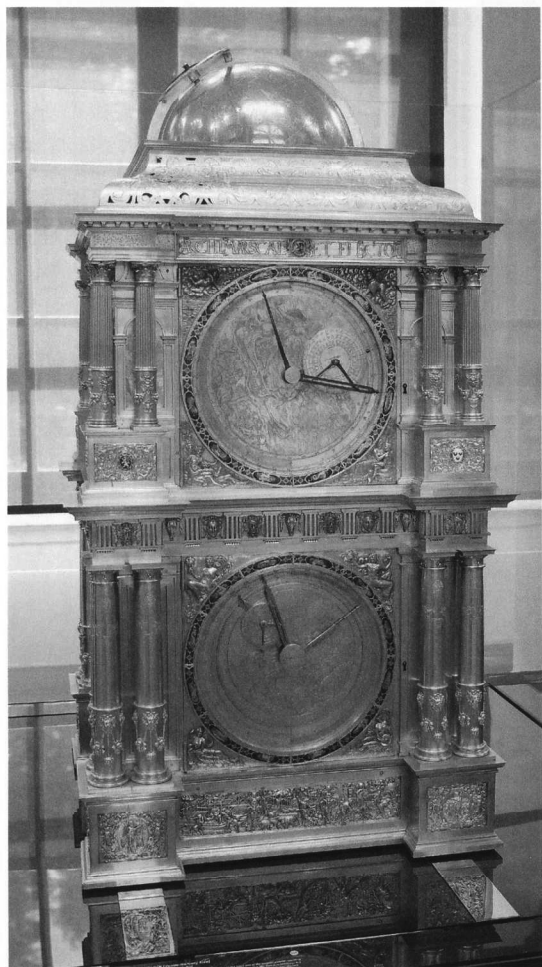


Fig. 1. ▲▲ Four-sided astronomical clock with 8 faces, made by Eberhard Baldewein in 1563-1568.

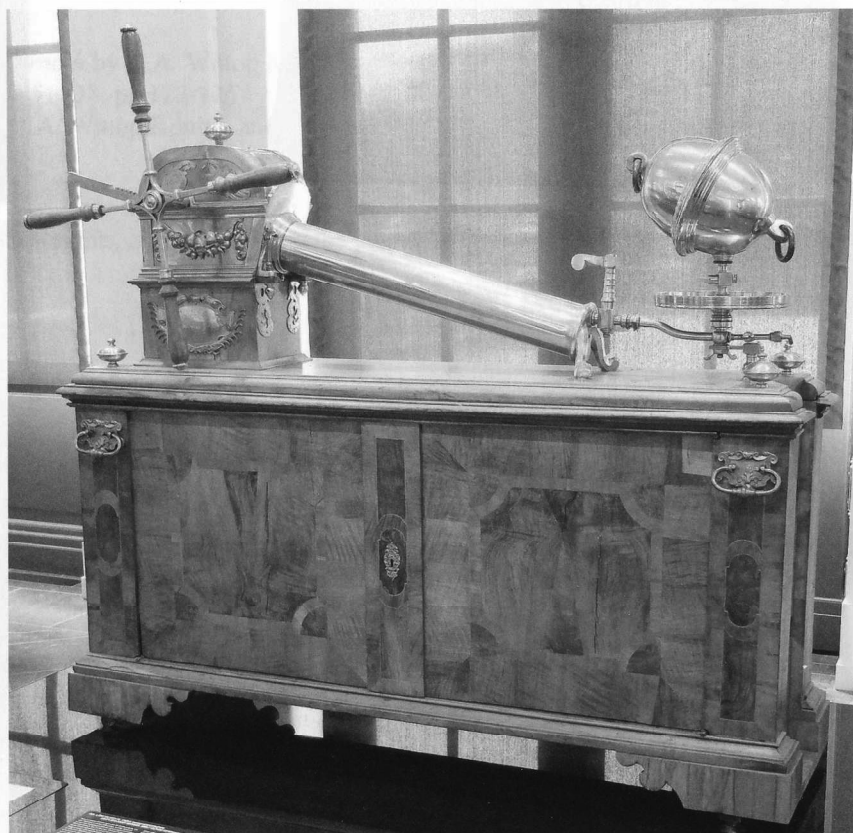
The Zwinger Palace houses 3 major collections: Old Masters (paintings), Porcelain (mostly from nearby Meissen) and the Mathematical-Physical Salon of which the wonderful mechanism depicted above is probably one of the most famous exhibits. Assuming that balances and weights would certainly be found amongst that collection it was clear that a repeat visit would have to be paid, albeit on a day when it was actually open.

Fig. 2. ►► Vacuum pump by Jacob Leupold, 1709.

A few years ago, I found myself touring selected areas in East Germany during a holiday. This activity can be thoroughly recommended for a variety of reasons, most of which can be summed up in the simple statement: There is just so much to see, regardless whether you enjoy arts, architecture, history, nature or even metrology.

Sadly, the planning department must have had a momentary lapse of concentration when the holiday was arranged: The day I visited the Zwinger Palace at Dresden was a Monday, and many museums and similar attractions are closed on that day on account of them being open on Sundays. Only on arrival at the locked-up ticket office did this unfortunate coincidence manifest itself.

The grounds were open, though, and so I had a good look around the courtyard, the outside of the buildings and even peered through some windows. That was when I spotted the astronomical clock shown in Fig. 1.



Finally, a few months ago that occasion had arrived! Now of course by that time I had done my homework and it was clear that the focus of the Mathematical-Physical Salon is not on artefacts that would be of great interest to ISASC members: The majority of the collection consists of clocks, astronomical instruments, globes (terrestrial and astronomical) and various other elaborate measuring devices.

However, trawling the galleries I came across a certain number of exhibits which lie closer to our kind of interest, especially when they are looked at from more than one angle - you will get the gist of what I mean in the following paragraphs.

The first item that made my eyes light up was the vacuum pump shown in Fig. 2. A vacuum pump, what on earth has this got to do with scales and balances?

Nothing at all - until you read the small print: This vacuum pump was made by Jacob Leupold (1674-1727) of Leipzig. Jacob Leupold wrote the multi-volume treatise *Theatrum Machinarum Generale* on the state of the art of scientific instruments and related machinery in the early 18th century. Much of what we know about early scales, balances, weights, hydrometers and many related things stems from his writings. He was also a leading scientific instrument maker of the period; for example he is known to have built the cart weighing steelyard of Leipzig which was at the time an outstandingly precise and advanced instrument. None of his scales and balances are known to have survived, so you can perhaps now understand my astonishment being able to marvel at such a magnificent piece of machinery from the master's own hands.

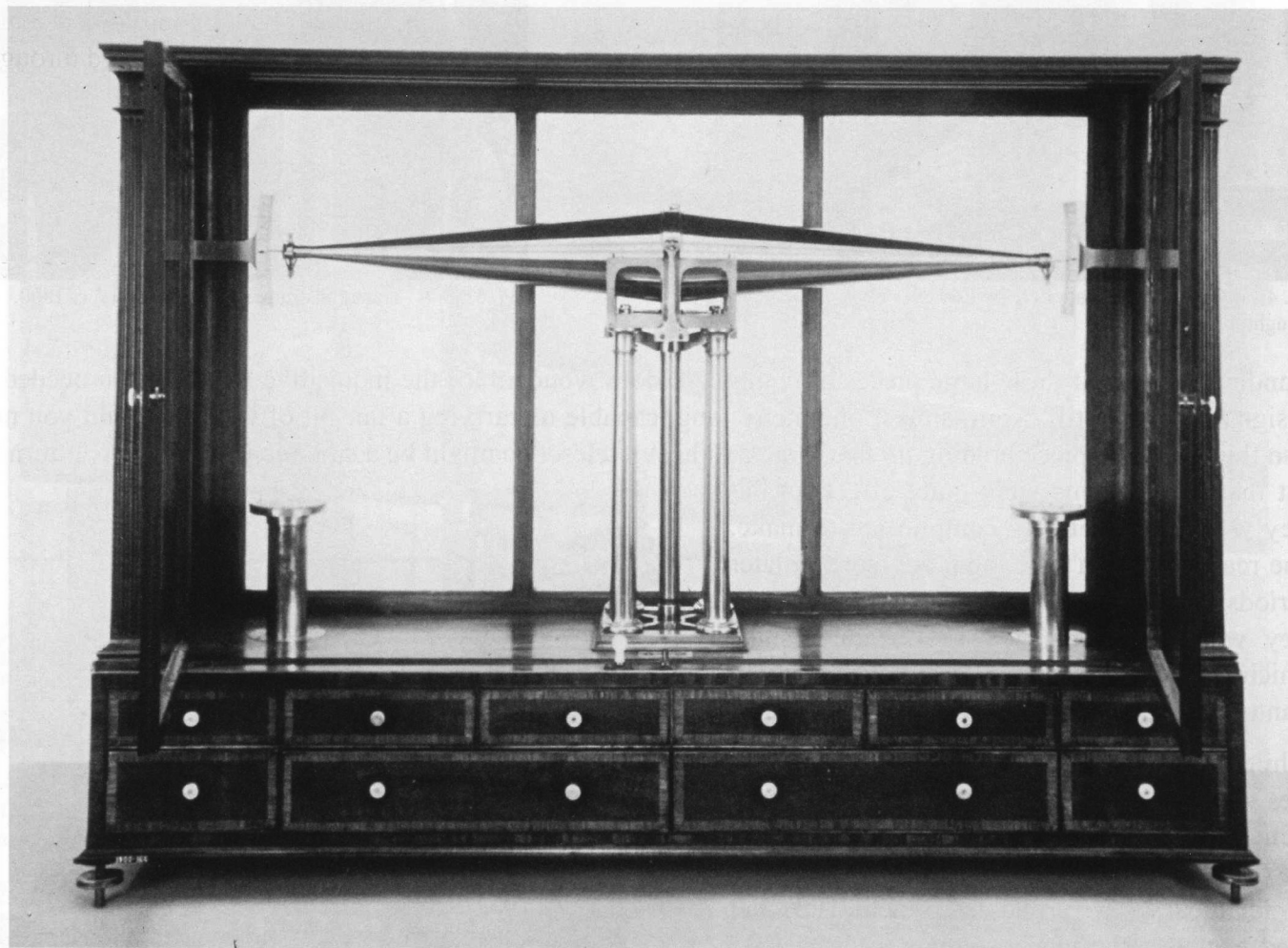


Fig. 3. ▲▲ Cone-beam balance by Jesse Ramsden, made before 1789.

This image comes from the Jenemann archive, by the way. It looks like Hans Jenemann photographed the relevant page from John T. Stock's book *Development of the Chemical Balance*.

Jumping ahead several decades from Leupold's days we find balances which utilise a double-cone shaped beam. One such device is shown in Fig. 3 - they are not unique but quite rare. It is known that the design of these beams stems from astronomical instruments and similar devices used in surveying. The Zwinger does not have a cone-beam balance but it does have an astronomical circle and a transit instrument, see Figs. 4 and 5.

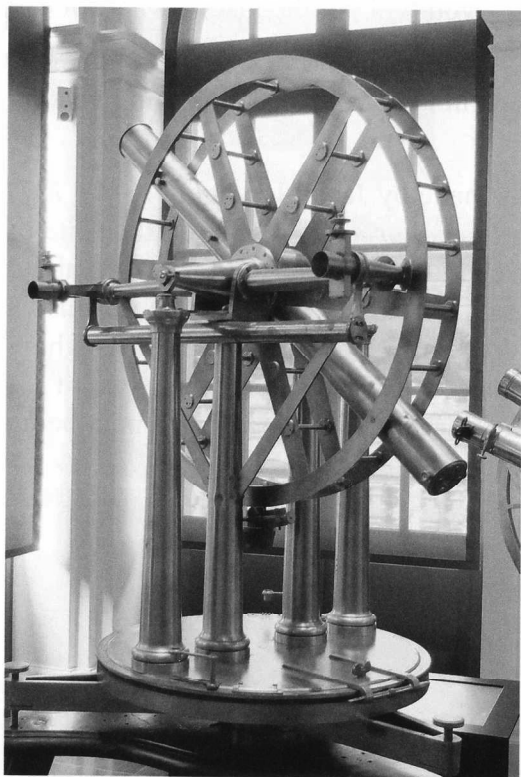


Fig. 4. ▲▲ Astronomical circle by Edward Troughton, 1793.

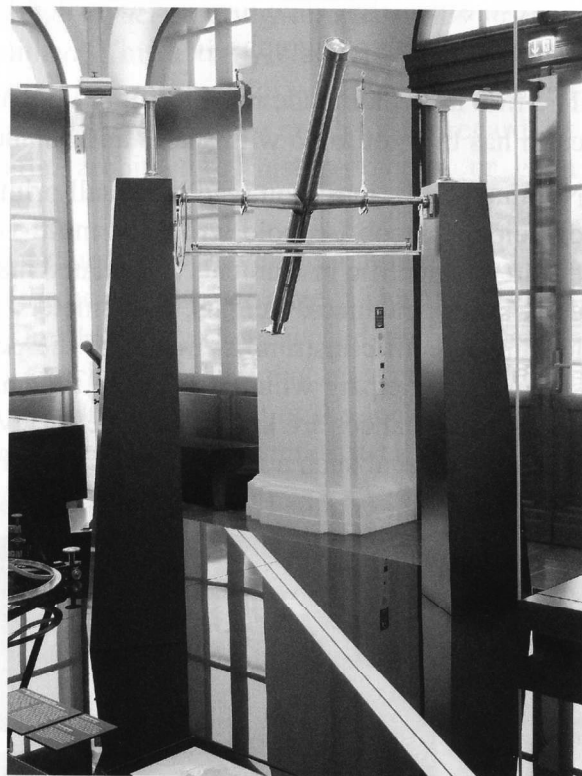


Fig. 5. ▲▲ Transit instrument, William Cary, c. 1800.

Standing in front of these large pieces of equipment does wonders for the inquisitive mind: If you needed a design for a very stiff beam, almost one metre long, capable of carrying a fair bit of weight, would you not also think that the piece holding up that large and heavy telescope might be a suitable proposition? It turned out that these beams were quite effective, but they were also relatively complicated to make. The reason we don't see them anymore in later periods is not that they did not perform well; they were just superseded by beam designs which were easier to make, especially when you wanted more than one of the same dimensions.

While we are on astronomical subjects - apologies to the purists - I could not resist taking the picture in Fig. 6: This shows two old telescopes, the one of which in the foreground is said to be an identical twin of the instrument Herschel used to detect the planet Uranus in 1781. He built these himself. A rare and unexpected find, and I would have expected this kind of device to be a much larger affair, but its mirror has a mere

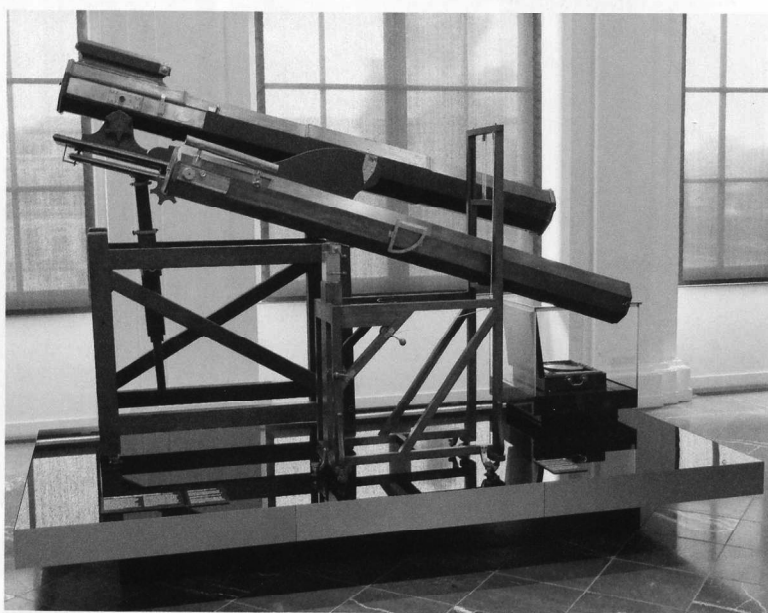


Fig. 6. ▲▲ Telescope built by William Herschel c. 1780.

150 mm diameter and it is around 2 metres long. The massive contraptions we associate with Herschel and his work (the size of a house and shown on many period illustrations) came later and were mainly used in his research into nebulae.

I guess I finally have to show some scales: They have exactly 2 on display, and they are shown in Figs. 7 and 8. A beautiful equal-arm scale and an equally beautiful steelyard, both of Nuremberg origin. My observation here is: They compensate with class what they may be lacking in mass.



Fig. 7. ▲▲ Equal-arm balance, Nuremberg, c. 1590.

The balance is adorned by a pair of sea creatures along the beam and a pair of engraved heads on the sides of the central support. Each pair consists of one male and one female figure; this ornament may be a play on the balance of the sexes.



Fig. 8. ▲▲ Steelyard, Nuremberg, c. 1590.

The beam of this steelyard is decoratively embellished as a sword handle ending in a gilt ram's head. The poise is slid along the beam until it balances the load in the pan, at which time the weight can be read from the graduations in "Mark" and "Lot" units.

The statement above can be extended to the weights category: I found a mere 3 exhibits, but look at what superb items these are: A set of Nuremberg nested weights (Fig. 9), an almost impossibly beautiful coin weight (Fig. 10) and a set of glass reference weights (Figs. 11 and 12).

The smallest weight is 0.5 "Lot" which is around 7.2 grams, the largest is 400 times heavier at 25 "Mark", over 5 kg. Nuremberg brass founders produced the largest share of such nested weights in Europe.



Fig. 9. ▲▲ Nested weights by Konrad Most, Nuremberg, 1588.

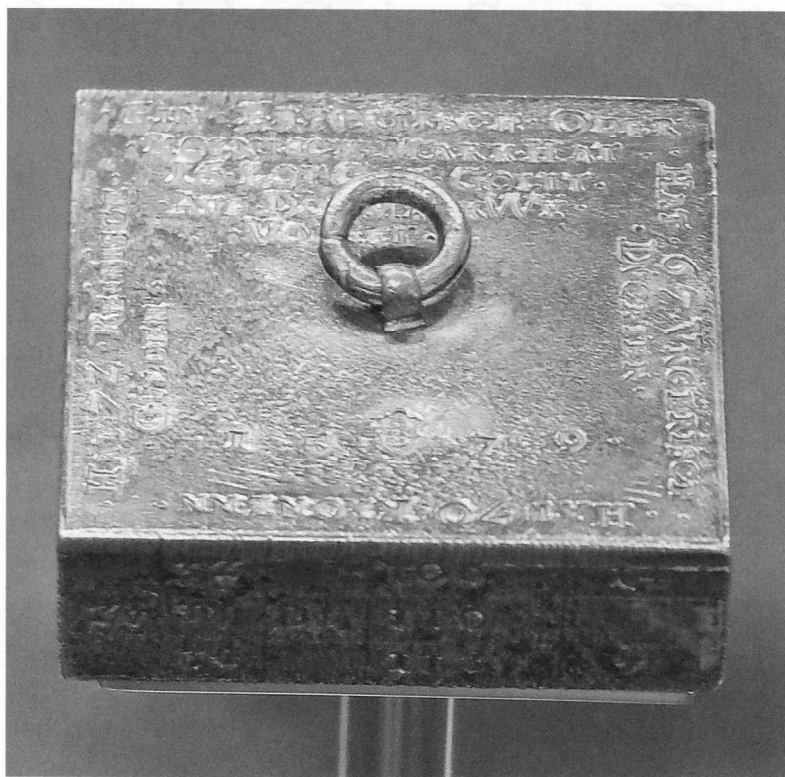


Fig. 10. ▲▲ Coin weight, German, 1579.

Unfortunately no statement was given about the weight other than the date and the inscriptions are not clear enough for me to interpret. Once again I would assume that it falls into the "Mark" and "Lot" system. (1 Mark = 0.5 Pfund = 16 Lot) Can any of our coin weight experts offer further insights?

Glass weights were one of several cul-de-sacs which were tried and abandoned in the search for the ideal material from which to make high-precision weights. Amongst the others were rock crystal, base metals with gold (or other noble metal) plating and, one could argue, even the platinum-iridium nowadays used for the kilogram prototype. In any case, glass fell soon out of fashion: it absorbs both moisture and certain gases, it has a porous surface, can charge up electrostatically and of course is very prone to chipping and scratching. None of these characteristics would rank high on a list of requirements for highly accurate weights.

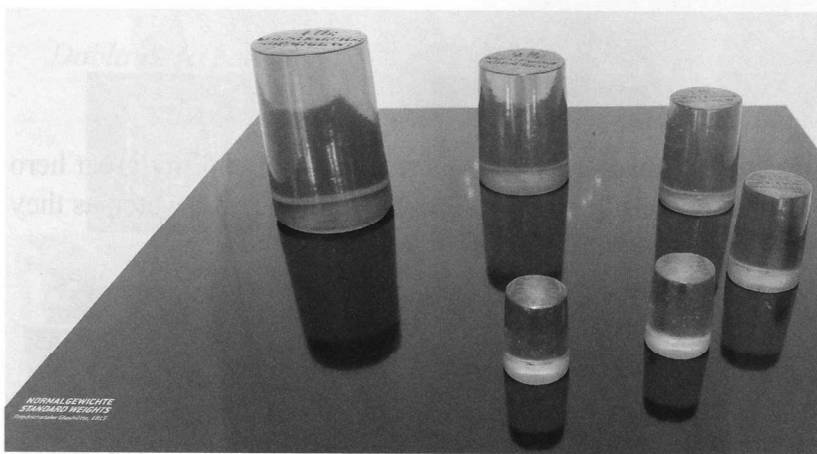


Fig. 11. ▲▲ Glass reference weights, Friedrichstaler Glashütte, 1815.



Fig. 12. ▲▲ Glass weight detail.

As a partial proof of the opening statement I would like to offer the final 2 pictures. About 10 km outside of Dresden is the village of Pillnitz. August the Strong (1670-1733) had another palace built there, overlooking the Elbe river. This is known to be an absolute gem of an attraction, both in terms of location, architecture and the history and art contained therein. Rather unexpectedly, another set of Nuremberg nested weights was encountered, Fig. 13. At very much the other end of the spectrum, and not untypically, the palace's kitchen exhibited two scales of the at least 100 years later, see Fig. 14.

Fig. 13. >> Nested weights by Albert Weinmann, Nuremberg, 1583.



Where to go next time? Halle an der Saale, I reckon. Paul Stückrath, Albert Rueprecht and my great hero Paul Bunge were all born in that town in East Germany - there must have been something in the water, as they say.

Fig. 14. >> 2 scales in the kitchen of Pillnitz castle.



Spanish Coin Scale Boxes, Part 4

BY LUDWIG RAMACHER & XISCO VALLÉS

Coin scale boxes from Madrid and Castilla-Leon

When we started our journey with articles about coinscale boxes from Barcelona and Valencia, we did not know much about boxes from other areas of Spain.

During the preparation of the article about the boxes from Andalusia our knowledge increased about that area and when we now look at Madrid and other parts of Castilla-Leon, we are able to identify certain boxes more easily, simply by identifying them as not being from one of the other areas, in combination with other sources of knowledge.

That allows us to conclude our descriptions of Spanish coin scale boxes with this fourth article on the older boxes reaching back to the early 18th century. One or two further articles about boxes of the later 19th century, of as yet unidentified origin or imported ones may follow to make the picture complete.

Madrid has been, with only a short interruption, the capital of Spain since 1561, when the royal court was moved to this city. The town most probably had an Arabic foundation in the 10th century with a continuous settlement around a castle by the 13th century. For the kingdom of Castilla-Leon towns like Toledo, Burgos and Valladolid have been important for centuries.

In the 16th century, the Spanish throne came to the Austrian Habsburg family till early 18th century when it went to the French Bourbons after the War of the Spanish succession.

Important decisions about the use of coinweights by royal decrees date back to 1488¹. The official coinweights of this period are well known and described². While the others are coin-weights for coins of the Castillian mainland, the Aguila is for a coin from Sicily, belonging to Castilla at those times. Very few similar looking Castillian coin-weights are also known from that period for Portuguese gold coins.

Dobla de la banda



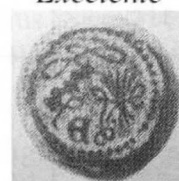
Castellano



Medio castellano



Excelente



Florín



Aguila



Ducado



Corona



Figure 1. ▲▲ Early Castillian coinweights.

In the same decree the first Marcador Mayor was nominated. The responsibility of the Marcador Mayor was to control the coinweights (ponderales) and apothecary weights (pesas boticarios) and to organise the supply for the whole kingdom. In the beginning the task was connected with the royal court, so it was probably moving like the court between different towns. Later on the Marcador Mayor was connected with the mint in Madrid and the Ensayador Mayor (controller of the quality of precious metals and coins) was also fulfilling this task. As we find these persons' marks on apothecary weights as well as on coin weights table 1 shows a list of the known "Marcador Mayor", their dates and the marks used. The situation between the early 17th and late 17th century is unclear.

TABLE 1

Name	Original Profession	Mercador Mayor (MM)	Ensayador Mayor (EM)	Time as MM	Mark
Pedro Vegil de Quinones	platero de la reina	Yes	No	from 13.10.1488?	?
Diego de Ayala	platero mayor	Yes	No	from 1504	crowned castle?
Juan de Ayala		Yes	No	from 3.5.1553	crowned castle and lions?
Felipe de Benavides	tapicero mayor	Yes	No	about 1575	?
Juan Beltrán de Benavides		Yes	No	from 1601	crowned B
There is some information missing about the 17th century					
Bernard de Perdero Negrete		Yes	Yes	from 1695?	?
Joseph Garcia Cavallero		Yes	Yes	from 1715-1744	CAVALLERO
Juan José Garcia Cavallero		Yes	Yes	from 1744-1759	CAVALLER°; JJC?
José Tramullas y Ferrer		probably Yes	Yes	from 14.09.1759 EM-1764	S/TRA?
Juan Rodríguez Gutiérrez		probably Yes	Yes	from 07.06.1764 EM-1782?	RODRIGUEZ
Pedro Cano		probably Yes	Yes	from 09.04.1782 EM-1800?	CANO
Manuel de Lamas		probably Yes	Yes	from 23.05.1798 EM-	LAMAS
Ildefonso de Urquiza	platero	Yes	Yes	from 01.08.1814 EM + MM	URQUIZA
Antonio Rafael Narváez		Yes	Yes	from 10.6.1812-27.5.1813 EM; from 03.08.1834 again EM+MM	NARVAEZ
Eugenio de Larra		probably Yes	Yes	from 1858 EM	LARRA

There are two types of boxes we assume to be from Madrid and/or Castillia-Leon, a type made from solid wood of mainly rectangular shape but with a nose in front, and another type looking like a loaf of bread and covered with brown decorated leather.

The type of boxes we assume to be specifically from the town of Madrid are made from solid wood, often decorated on top or sometimes painted inside. We have not seen any such box with a label inside, neither of a maker nor with an explanation of how to use the box. Consequently, it is not easy to have clear indications about the makers.

But in some cases we find the coin weights verified by one of the Marcador Mayors and the pans of the balance have other marks. One obvious possibility would be that this mark which seems to be composed of a first and second name is that of the maker.

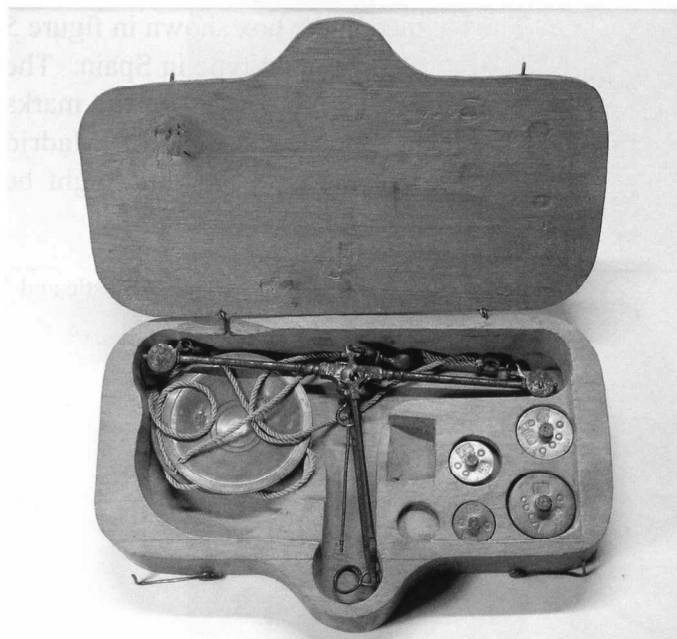


Figure 2. <> The two main types of boxes used in Castilia before the 19th century.



Figure 2 left shows a box with a similar shape, but different internal construction. Five coin weights have been foreseen plus a holder for the fractions. The coin weights show the mark CAVALLER°, which is thought to have been used by Juan José García Cavallero. In addition there is a mark of a castle (for Castilia) and a flower (unidentified.). The balance is marked as shown in figure 3:



Figure 3. ▲▲



The style of both marks would suggest dating this at 1731³. Thus it could be that of the silversmith José Santos de Moya who lived till 1736, in his role as verifier.

The box shown in figure 4, shows some typical features of the type made in Madrid. It is not simply rectangular but has a kind of nose, where, in this special case, the holder for the two pans is placed. This box has only four holes for coin weights so should be a rather early type, because after 1731, typically five coin weights would have been required by law. No holder for fractional weights was supplied. The two remaining coin weights have marks for Castilia and Leon plus the mark JJC. We think that this should be of Juan José García Cavallero, main verifier in Madrid between 1744 and 1759.

Figure 4. <<

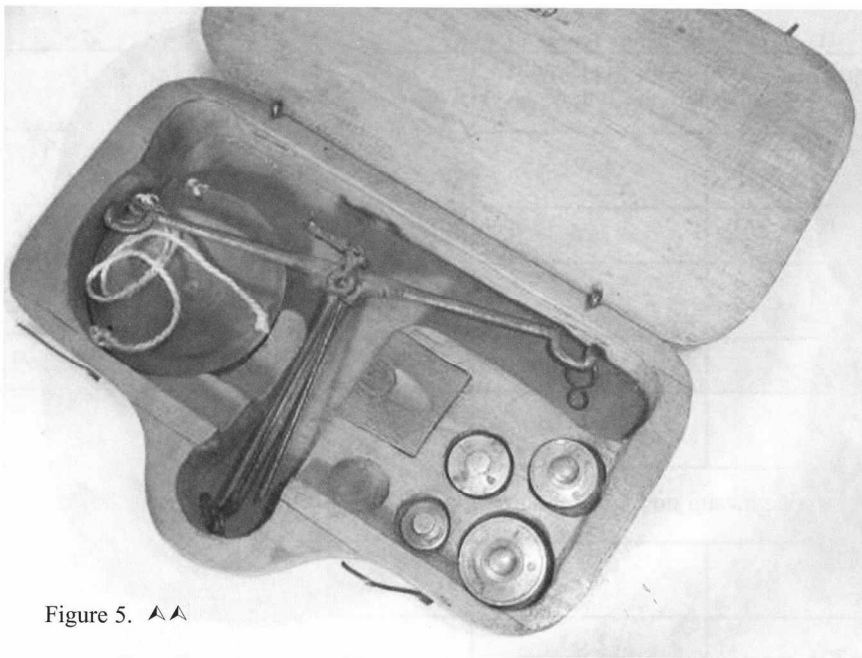


Figure 5. ▲▲

The balance in the box shown in figure 5 is of a very common type in Spain. The one remaining pan has again the marks 31/S.TOS and the shield of Madrid above 31. The coin weights might be replacements.

The box shown in figures 6 and 7 is nicely decorated. The balance is quite beautiful and altogether this is a historic piece. The coinweights show several marks which are like JJC and castle and lion that confirm that they are from Castillia-Leon. Some weights have a mark GP, which we have not yet identified. Vice versa on the pans we find again GP combined with the shield of Madrid but also the mark ML/RODz for Manuel Rodriguez, who was a silversmith and verifier in the town of Tuy in Galicia, and with the mark of the shield of that town. The mark JJC would indicate the box being from about the middle of the 18th century. Remarkable and very rare now is that weights have been adapted to the monetary system of José Bonaparte, a brother of Napoleon and king of Spain between 1808 and 1813. This is indicated by the numbers 320/160/80/40⁴ which represent the value of the coin in “reales de vellon” of this time.

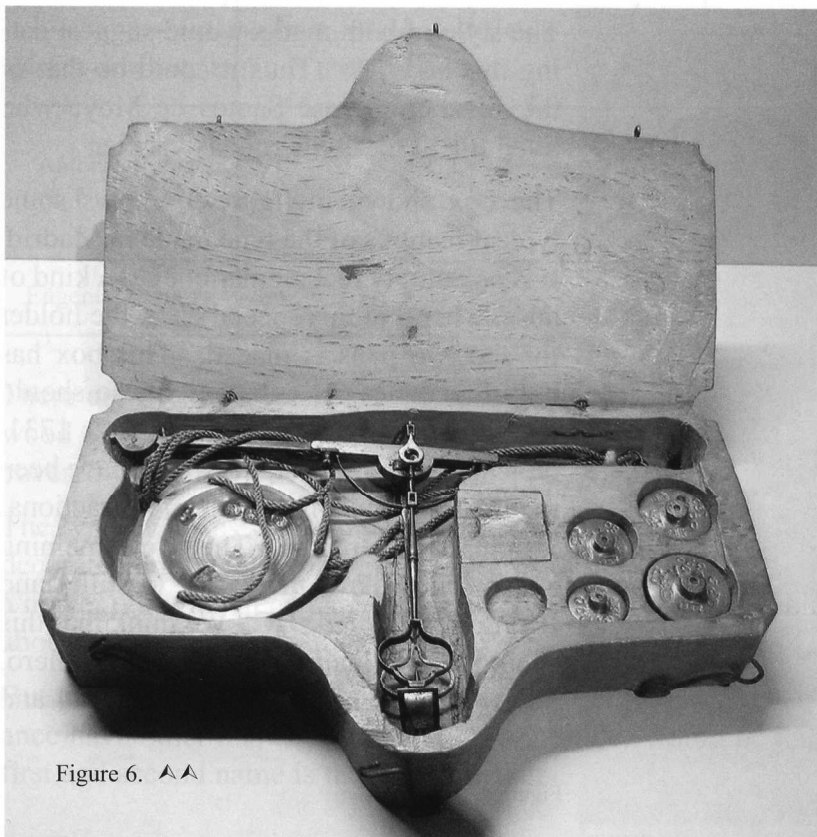


Figure 6. ▲▲

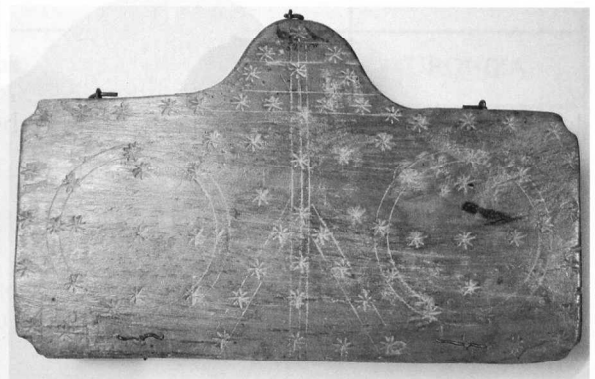


Figure 7. ▲▼



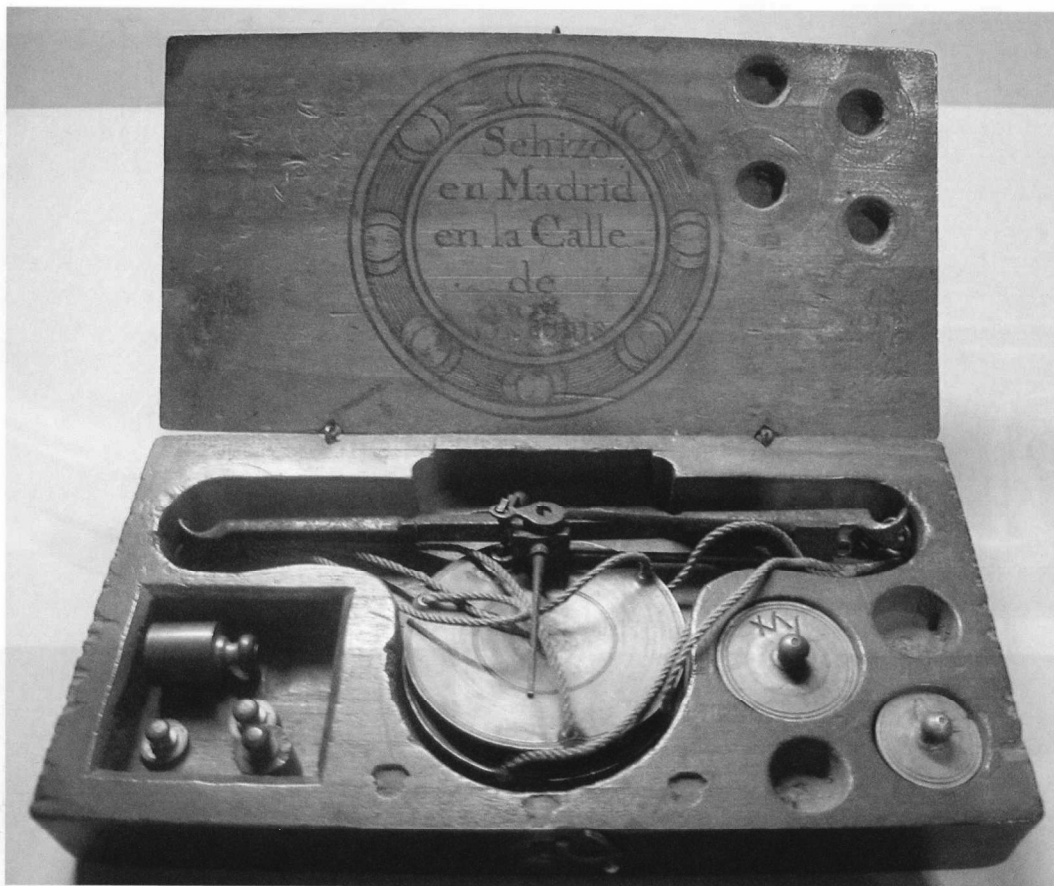


Figure 8. ▲▲

This box is rather different, as it is rectangular and has a label stamped into the lid. Why the maker does not mention his name but only the place of production (Calle de San Luis in Madrid) is a riddle. Not easy to say when this box was made. It has obviously only four holders for coinweights, but a large holder for fractions or whatever. The balance contained does not help us to understand more. The coinweights show values which were more 19th century, as does the less craftsman-like way of making it.

When we now compare them to the other type of boxes, the one shown in Figure 1 above might be the oldest known example. We have to say “might” because we are more easily able to identify the age of the coinweights or of the balances than of the boxes specifically.



Figure 9. ▲▲

The weights show the crowned B which should be of Juan Beltran de Benabides, so the coinweights would be early 17th century. Also the crowned M on the shield with the bear eating at a strawberry-tree indicate the city of Madrid. Inside the box is an inscription which can be read as Damian Mantilla, probably the maker of this box, but not yet further identified.



Figure 10 a and b. ▲▲

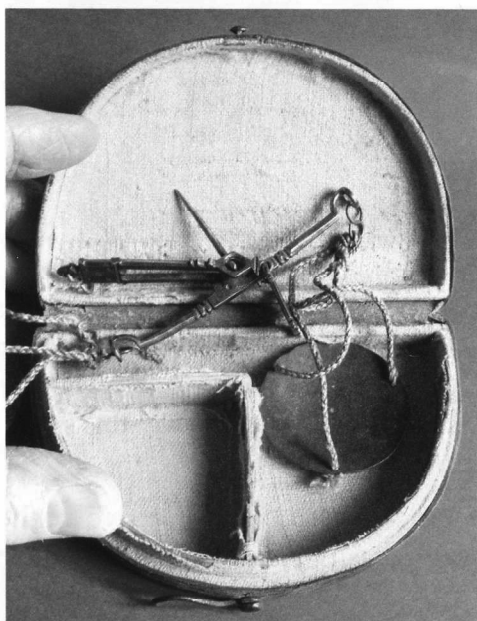


Figure 11 a and b. ▲▲

Figure 10 and 11 show three more examples of this type. The box shown in Figure 11b can probably be identified better than the other examples, as the pans of the balance are verified by Juan José Álvarez Baio, a silversmith from Logrono (nowadays part of the region La Rioja), who worked around the middle of the 18th century. The weights in that box may be later substitutions, though weights of that type were made around the time. This type of boxes were made in different sizes, with “diameters” between 8.5 and 13.2 cm.

Acknowledgements:

We have to thank Diana Crawforth-Hitchins and Carlos Riestra for permission to use their photos and data.

Notes:

1. This does not mean that there was not legislation about this previously. Also coinweights are known which seem to be older. But the decree of 1488 was the first completely systematic approach.
2. E.g.: Antonio Roma Valdés, José Luis Brana Pastor; *El uso y la fabricacion de pesas monetales en castillia antes de 1488*; *Gaceta Numismatica* 187, June 2014.
3. The shield shows a bear eating from a strawberry-tree. The plant is called *madrono* in Spanish. The fruit is slightly alcoholic already when ripe and is used in Spain and Portugal to produce *Aguadente* a liquor which is rather strong (up to 70%), when white and young.
4. The Spanish coinage was remarkably stable in mass. José Napoleon changed the values but not the mass of the coins. These masses were nearly the same over centuries, which does not mean that the content of gold and silver remained unchanged.

J. Stone Rockers?

BY MICHAEL FOSTER

Michael Crawforth included a Figure 79 in his work that he attributed to J. Stone of London. Who was J. Stone and did he make other rockers?

This question and the following facts are the result of a brief study of a rocker in the author's collection that closely matches Michael's Figure 79.

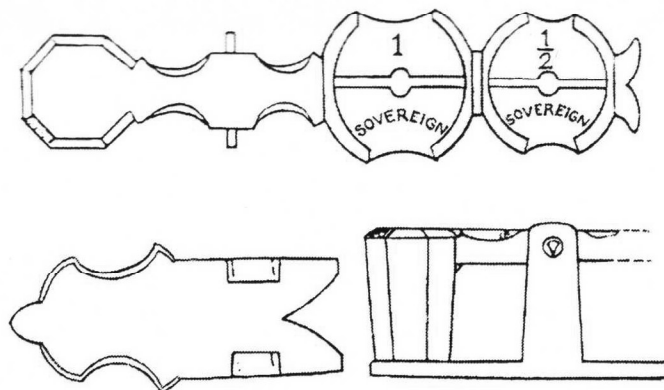
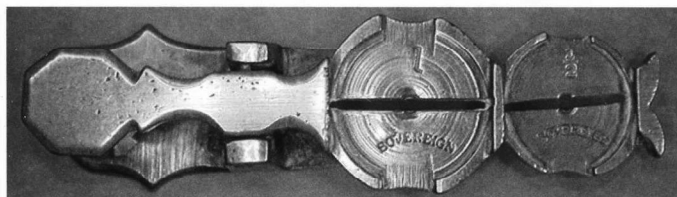


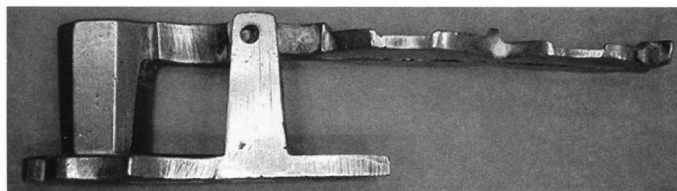
Fig 79

Michael Crawforth's Figure 79

The rocker that appears to match is shown below:



Variant 1: J. Stone

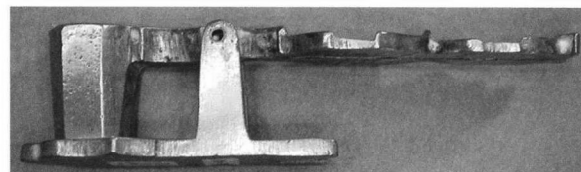


The main resemblance is in the heavy octagonal elongated-poise, the base shape, open pivot holes, the down-curve 'SOVEREIGN' label on the platters, and the prominent ridge between platters. This rocker has machined platters and notches, and the bevelled edges on the poise and beam that are shown in Michael's drawing.

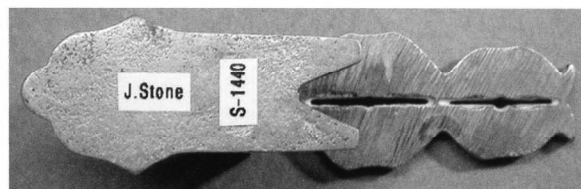
Variant 1a is missing the bevelled edges.



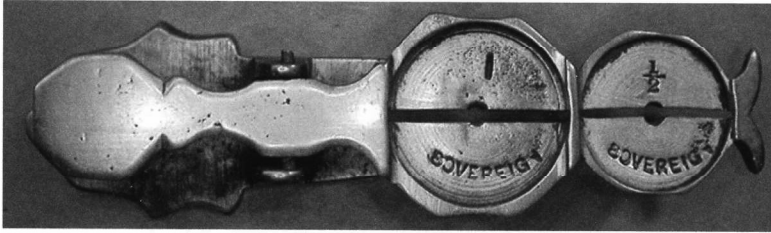
Variant 1a: J. Stone



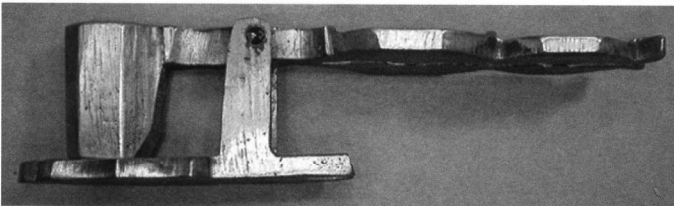
Variant 1a: J. Stone



A rocker that would appear to be by the same maker is variant 2 based on the octagonal poise style, the beam size and shape and the platters and finial:



Variant 2: Possible J. Stone



This rocker has a slightly different base shape which is closer to the “Mordan style” rockers, with narrower columns and open pivot holes. It has slightly bevelled edges on the beam and the machined platters, but no platter notches. The ‘SOVEREIGN’ labels on the platters are up-curve.

So who was J. Stone? Michael Crawforth identified the maker of Figure 79 as: J. Stone, 18 Warwick St., London, and did the drawing of the rocker but provided little other information. The similarities of variants 1 and 2 and the rocker in Figure 79 would lead one to believe that J. Stone was a maker who used one basic beam style with minor platter shape and labelling changes, combined with at least two base styles.

The author has currently been able to find only one J. Stone of Warwick St, London in the Directories available to him.

J. Stone

1823 Stone, James, machinist, 18 Warwick St, Golden Sq, London, DR#62, p.321.

In looking at the London *Morning Chronicle* and *Morning Post* newspapers of the time at: <http://www.british-newspaperarchive.co.uk/> we can find a series of advertisements and classifieds by J. Stone of 18 Warwick St, Golden Square, London, covering the period from September 1820 up to May 1825.

It would appear that James Stone, machinist was in business for the period from late-1820 to mid-1825, selling a sovereign rocker during the early days of rocker production.

A machinist in the early 19th century was a manufacturer and user of a variety of machines and tools to make or modify parts. Sometimes the parts were wood but often they were metal such as brass. The goal of the machines and their use was to produce a part that conforms to a set of specifications, or tolerances. Machinists were often associated with a brass foundry, and typically were involved in rocker manufacture, drilling pivot holes, machining platters and beams and adjusting the balance of a rocker to check for the Least Common Weight.

The author will leave it to the reader to draw his own conclusions or add some information to this study.

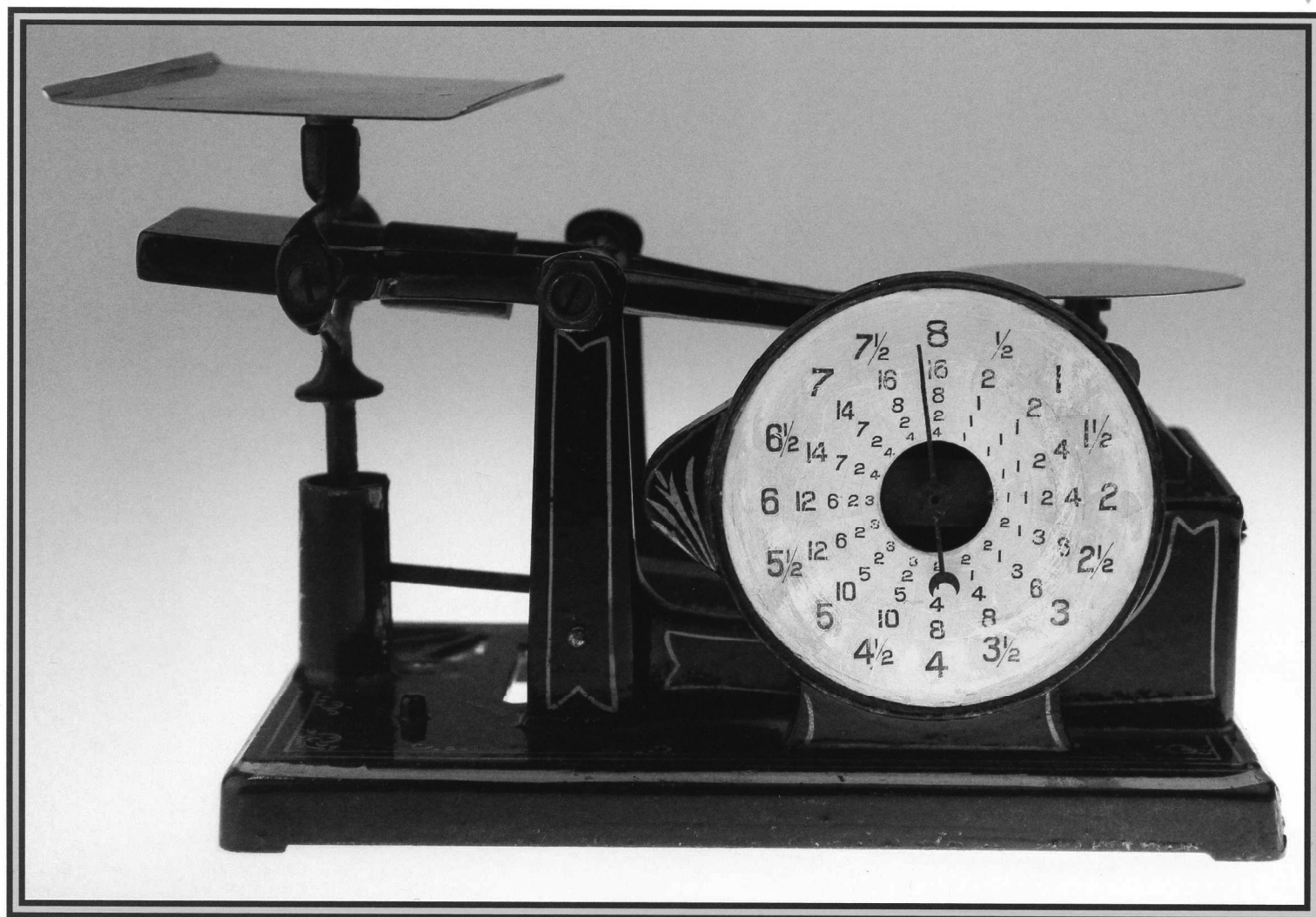


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Laycock Collection.

Michael Foster 4213-4216



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Cook's Automatic Postal Scale, or Too Many Cooks

BY STEVE BEARE

Scale collectors have long marveled at the variety of scale designs for what is a relatively simple principle. I recently saw an intriguing and complicated postal scale for sale on eBay. After locating the patents, I decided that it would make for an interesting project for further research and purchased it. The mechanism uses built-in lifting weights to avoid the need to manually add small weights to balance letters and small packages. To my surprise, I learned over the course of the research that there are at least six versions of the scale, several of which have not yet come to light. Not only is the mechanism complicated, but cost-driven changes in design over a period of fourteen years made it a challenge to unravel dates of manufacture for the fifteen surviving examples of Cook's Automatic Postal Scale located so far.

The inventor was Moses G. Cook, born in New York City in 1837, and raised in Western Massachusetts in the small town of Ashfield. Probably relevant to his scale invention, his grandfather was the postmaster of Ashfield until 1841, followed by his father until 1860. Moses was postmaster from 1863 until 1878, at a salary of \$340 per year, followed by his sister.¹ He was also the town clerk from 1870-1873.² He saw first-hand the tedium of letter and parcel weighings with a two-pan balance with added weights or a single pan balance with a sliding poise. The population of Ashfield was only around 1,000 in those years, which evidently gave him spare time to invent.

Moses G. Cook's first patent was in 1872 as co-inventor with his namesake uncle, Moses Cook, for an improvement in shuttles for sewing machines. This was followed by another patent in 1874 by the two Cooks for bobbin winders for sewing machines, for which they formed the Cook Bobbin Winder Co. of New Haven, Connecticut.³

First Design-Lynn, 1882

Cook's first patent for a lifting weight postal scale was granted November 21, 1882 and was half assigned to Joseph N. Smith, of Lynn, Massachusetts, just a few miles outside of Boston.⁴ See Figure 1. During the 1880s, Smith was a shoe manufacturer in Lynn, and was undoubtedly the source of capital for the scale venture.⁵ Cook appeared in the Lynn City Directory for the first time in 1880, and is listed as a traveling salesman from 1880 until 1882.⁶

While the 1882 patented one pound lifting weight postal scale may have been manufactured, no example of this model has yet come to light. It had 32 lifting plates to measure up to one pound in half ounce increments, which would have made it complicated and expensive to manufacture. The patent drawing shows a dial with the first class letter postal rate of 6 cents per ounce, in use from July 1, 1863 until October 1, 1883. See Table 1.

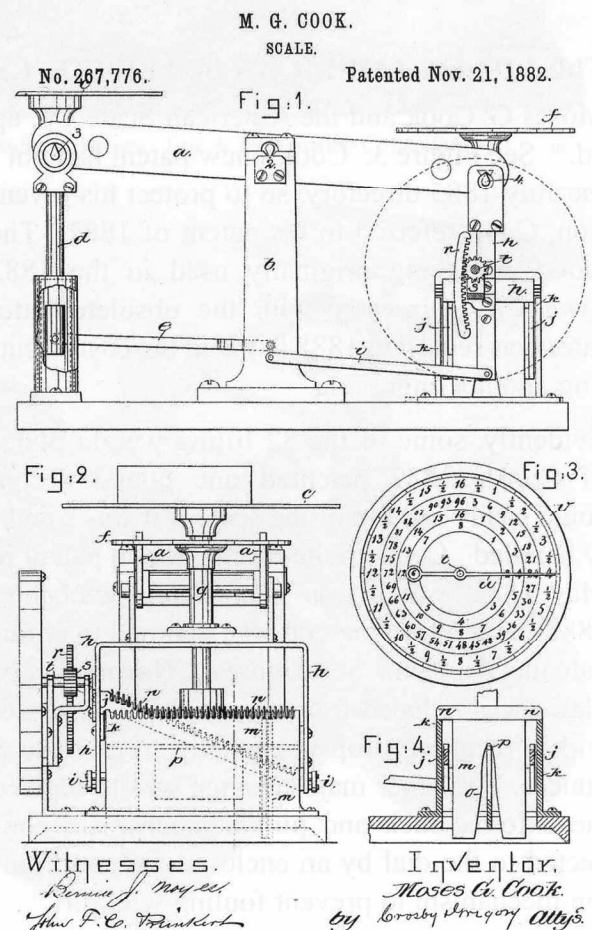


Figure 1. >> Cook's first scale patent, US patent no 267776, granted November 21, 1882 to Moses G. Cook, Ashfield, Mass.

Table 1. U. S. Rates for Domestic Letters Since 1863.⁷

Date Introduced	Rate for first ounce (USD) (Letter)	Rate for first ounce (Package)	Additional ounces
July 1, 1863	.06 (.03 per half ounce)	.06	.06 (.03 per half ounce)
October 1, 1883	.04 (.02 per half ounce)	.04	.04 (.02 per half ounce)
July 1, 1885	.02	.02	.02

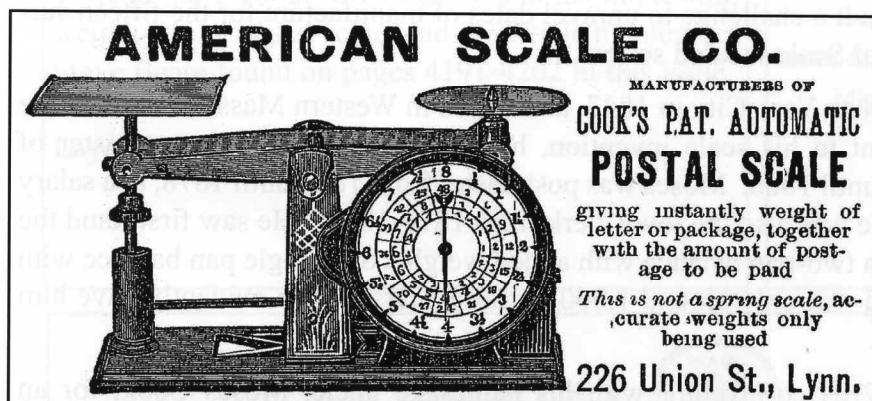


Figure 2. ▲▲ American Scale Co. advertisement-July, 1883 Lynn City Directory. p. 606.

Second Design-AMERICAN SCALE CO. LYNN, MASS. July, 1883-October, 1883

Cook must have begun work on an improvement almost immediately after his lifting scale patent was issued in July, 1882. By July, 1883, he advertised a new version in the *Lynn City Directory*, in which he was listed as head of the American Scale Co., Manufacturers of postal and merchandise scales, with a separate illustrated ad. See Figure 2.⁸ The wood engraving is the same 8 ounce lifting weight scale as the third design below with a solid paper dial and solid turned columns holding the pans, but the dial has the 6 cents per ounce letter rate used prior to October 1, 1883. No example with this 6 cent per ounce letter rate dial has yet shown up, though scales were undoubtedly sold.⁹

Third Design-AMERICAN SCALE CO. LYNN, MASS. May, 1884-July, 1885

Moses G. Cook and the American Scale Co. appeared in the July 1885 *Lynn City Directory*, but with a new ad.¹⁰ See Figure 3. Cook's new patent had not been issued [October 1885] by the time copy was required for the July 1885 directory, so to protect his invention, Cook referred to his patent of 1882. The wood engraving originally used in the 1883 *Lynn City Directory* with the obsolete letter rates was reused in 1885 to avoid the cost of cutting another engraving.

Evidently, some of the 32 lifting weight plates of Cook's 1882 patented one pound design could easily fall out of the scale if it was roughly handled. Cook applied for a second patent in May 1884, which was granted on October 6, 1885, with improvements that claimed to eliminate that problem. See Figure 4. The number of plates was reduced from an unwieldy 32 to 16, with a resulting drop in capacity from 16 to 8 ounces. The other major change was to replace the external rack and pinion mechanism connected to the dial by an enclosed rack and pinion mechanism to prevent fouling with dirt.¹¹

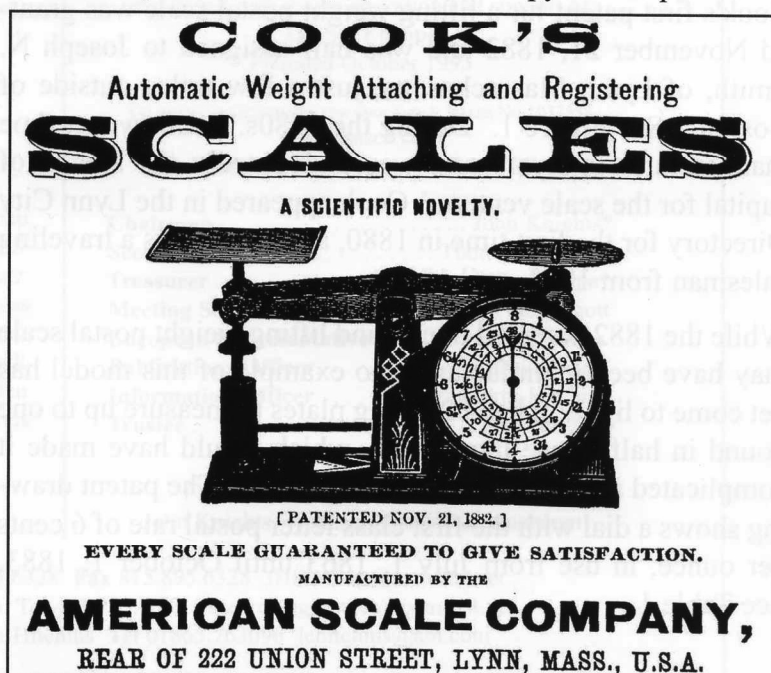


Figure 3. ▲▲ American Scale Co. advertisement-July, 1885 Lynn City Directory. p. 620.

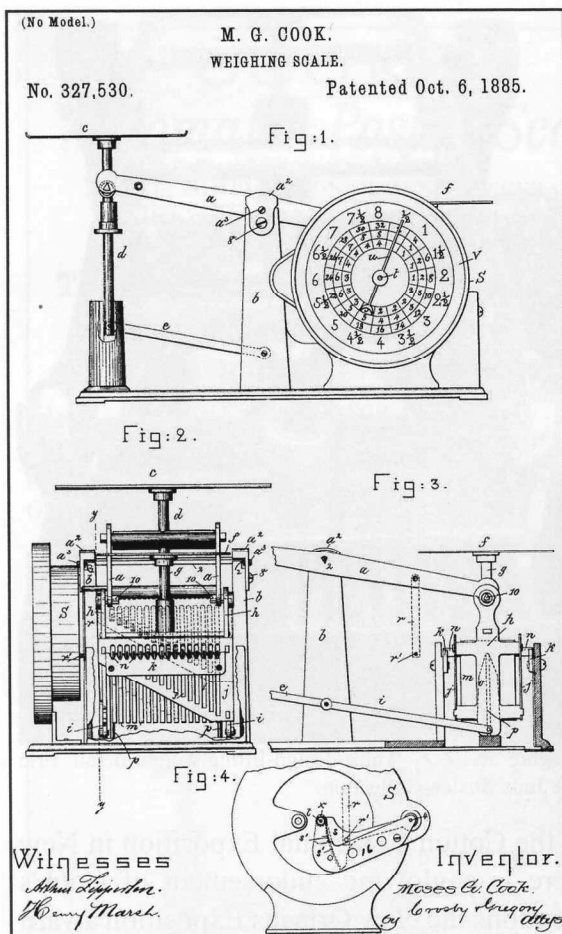


Figure 4. ▲▲ Cook's second scale patent, US patent no 327530, granted October 6, 1885 to Moses G. Cook, Lynn, Mass.

The earliest, and only known, example of the Third Design can be dated to between May 1884, when Cook applied for his 1885 patent and July 1885, when the first class letter rate dropped from 4 cents per ounce to 2 cents per ounce. See Table 1 and Figures 5a-5e. The paper dial is solid, with only a pinhole in the center for the pointer, and is marked with the patent date of Nov. 21 1882, which is consistent with the fact that the 1885 patent was not issued until October 6, 1885. As shown in the 1885 patent drawing, the two pans are mounted on solid columns, and the pivots under the supplemental weight pan are cut off both inside and outside the beam. The scale is stenciled: **AMERICAN SCALE CO. LYNN, MASS.**

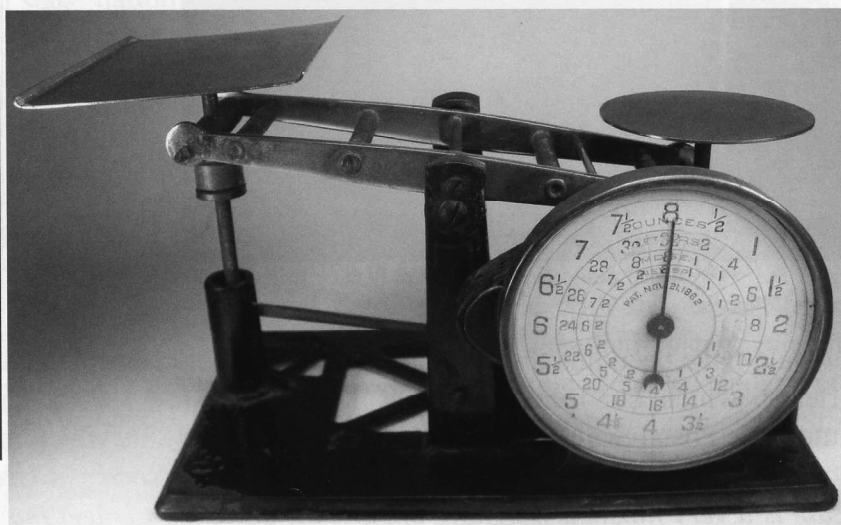


Figure 5a. ▲▲ Third design-overview. Eric & Judy Soslau Collection.

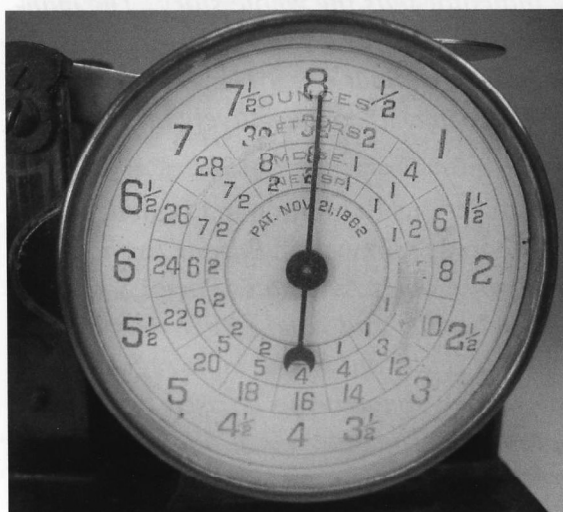


Figure 5b. ▲▲ Third design-dial detail. Eric & Judy Soslau Collection.

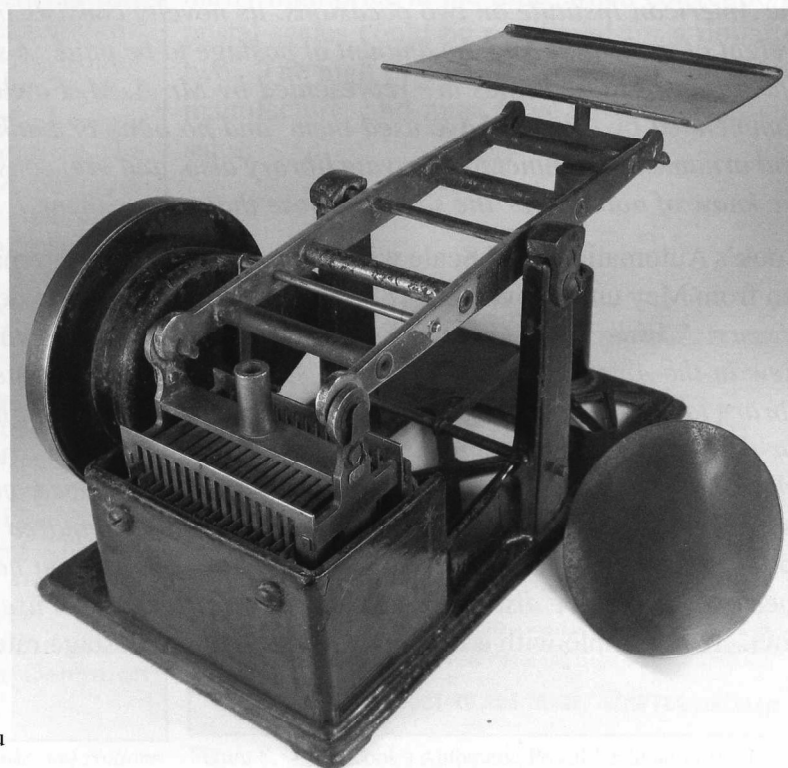


Figure 5c. ➤➤ Third design-rear view. Eric & Judy Soslau Collection.

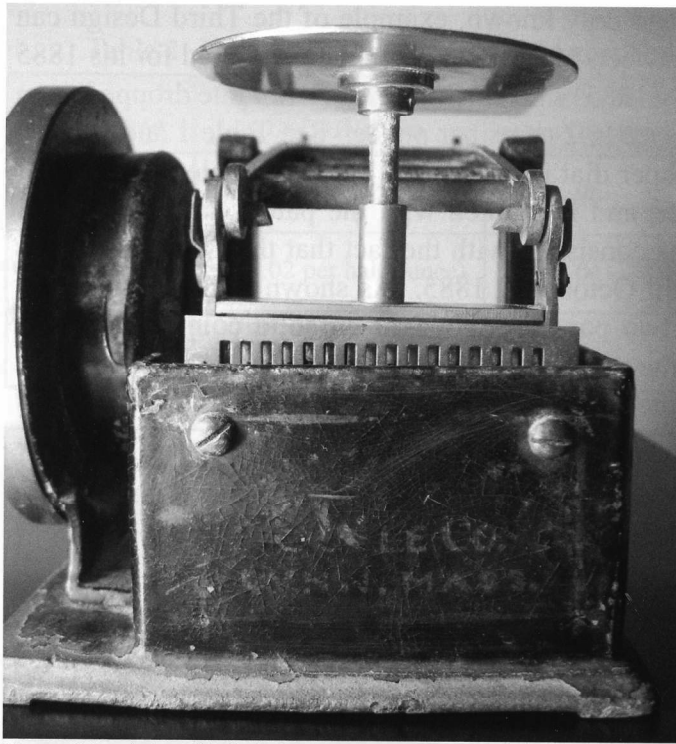


Figure 5d. ▲▲ Third design-end view, pivot detail. Eric & Judy Soslau Collection.

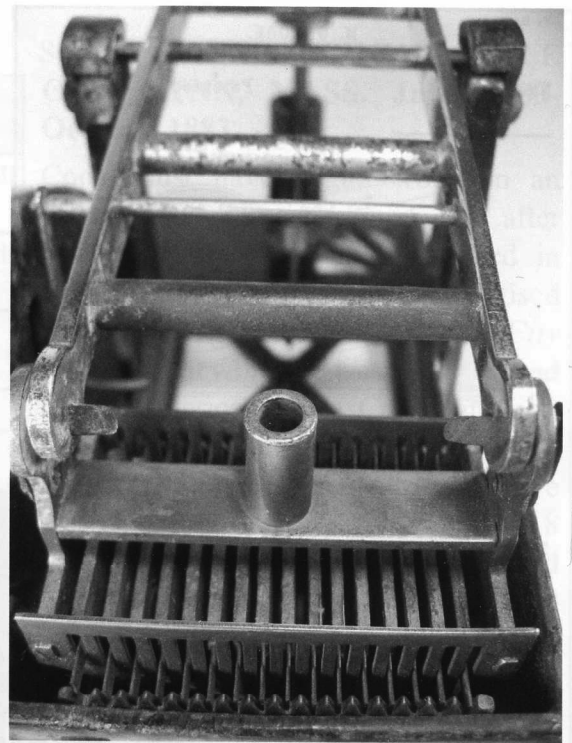


Figure 5e. ▲▲ Third design-lifting weight detail. Eric & Judy Soslau Collection.

It would have been this third design that won a first class medal at the Cotton Centennial Exposition in New Orleans, which ran from December 1884 until May 1885. There is a glowing endorsement of Cook's Automatic Postal Scale in the *Banker's Magazine* in 1886, which mentions the New Orleans Exposition award along with others from the American Institute of New York.¹² *A Useful Postal Scale. Cook's Automatic Postal Scale is a very finished weighing apparatus, designed to meet the need of something simple, convenient, and correct, and merits especial mention. It has secured the award of merit from the New Orleans Exposition and the American Institute on two occasions. its novelty consists in its self-adjusting weights, giving instantly the weight of the article and the amount of postage to be paid. A single indicator tells the whole story. The manufacturers of these scales are represented by Mr. A. M. Fowler, Jr., 339 Broadway. The scales are heartily commended by all who have used them, and no bank or banker should be without one. They form a useful and ornamental adjunct to a private library also, and are, considering their merit, comparatively inexpensive. We know of nothing for the same purpose that equals them.*

Cook's Automatic Postal Scale was also exhibited at the International Inventions Exhibition in London, which ran from May until November 1885.¹³ This was described in detail in the trade publication *Bazaar Exchange*¹⁴. *Messrs. J. Walker and Co., 96, Farringdon-street, E. C., are the agents for Cook's Automatic Postal Scale, on view in the American Gallery. It is a scale for letter, book, news, parcels rate, and is no larger than suits a library table. Its special virtue is that there are no loose weights, and it is really automatic in its registration, for there is a dial with four circles round it, spaced off by rayed lines, each space being crossed by a hand, which moves to the right section when the package is placed on the platform. The outer circle shows the number of ounces and the inner ones denote the amount required respectively for letters, newspapers, or books, so that we are told instantly what stamps to put on, without having to refer to postal regulations, &c. These specimen scales are disced for American rates; for British use, they will be produced in accordance with our laws. No example with a dial printed with British postage rates has surfaced.*

COOK'S Automatic Postal Scale

NOVEL, SIMPLE, CONVENIENT, ACCURATE.
Indicates instantly Weight and Post-
age on Letters, Papers and Parcels.

The Trade Supplied. Send for Circular.

HART & COMPANY,
31 & 33 King St. West, Toronto,
SOLE AGENTS FOR CANADA.

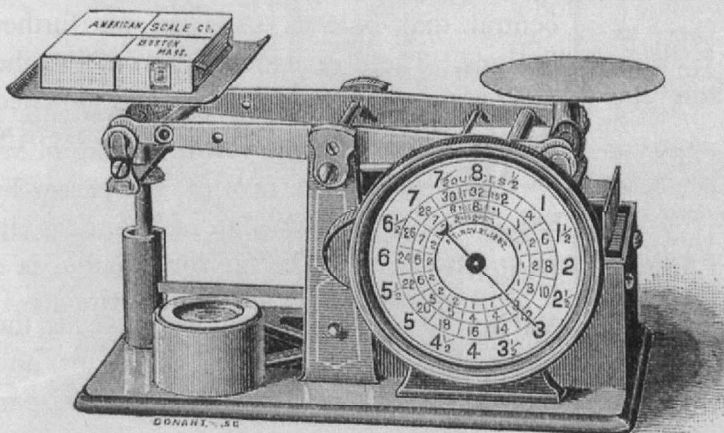
Figure 6. ▲▲ 1885 ad for Cook's Automatic Postal Scale. *Grip*. April 11, 1885.

The Third Design would also have been the one referred to in an ad in the Canadian satirical weekly, *Grip*.¹⁵ See Figure 6. The same ad ran for almost a year from April 11, 1885 until March 13, 1886. Significantly, this ad indicates that the stationers Hart & Company were the sole agents for Canada, and that an advertising circular for the scale was printed, no copy of which has surfaced yet.

Around the same time the *Grip* ad appeared, an illustrated article for Cook's Automatic Postal Scale appeared in the April, 1885 issue of the Canadian stationary trade publication, *Books and Notions*.¹⁶ Figure 7. In addition to an explanation of the four concentric rings on the dial, the article

notes that each scale is furnished with an 8 ounce weight in order to expand the weight range from 8 ounces to one pound. The text also says the dial is marked with Canadian postage rates, although the illustration shows the American postage rates in use from Oct 1, 1883 to July 1, 1885. The solid dial is also marked with the 1882 American patent date. No scale with the extra 8 ounce weight or a dial with Canadian postage rates has surfaced yet. This article appeared under Trade Notices, and was obviously coordinated with a Hart & Company scale ad in the same issue¹⁷. See Figure 8. For the first time, a price of \$6.00 is given for this scale, which was an extraordinarily high price at the time, when conventional postal scales could be purchased for a dollar or two. The high price reflected the complexity of manufacture, and must have severely restricted sales.

COOKS AUTOMATIC POSTAL SCALE.



We have a decided novelty this month in Letter Scales represented in the preceding illustration, and which are designed at once to meet a need for something simple, convenient and correct for postal weighing. The novelty consists in the *Self-adjusting Weights and Registering Dial*, giving instantly the weight of article, and amount of postage to be paid. A single indicator tells the whole story by means of four circles of accurately divided spaces, properly figured. The exterior circle shows the weight by half ounces; the next, the postage required for letters; the third, that for book post; and the inner circle indicates the cost of parcel post. The dial is marked up to eight ounces, thus doing away entirely with small weights that were so liable to be lost. With each scale is furnished a half pound weight, and additional weights can be supplied when required. This we are safe in saying is the most complete Postal Scale that has been ever put in the market and we predict a large sale. The enterprising stationers, Hart & Company, 31 and 33 King Street West, Toronto, are the sole agents for Canada. The dial of the scale gives the amount of postage in Canadian postal rates.

Figure 7. ▲▲ Cook's Automatic Postal Scale article in *Books and Notions*. April, 1885. p. 142.

COOK'S Automatic Postal Scale.

SOMETHING ENTIRELY NEW IN POSTAL SCALES.

No small loose weights. Weight of letter, book or parcel and rate of postage given instantly by the automatic action of the indicator and registering dial.

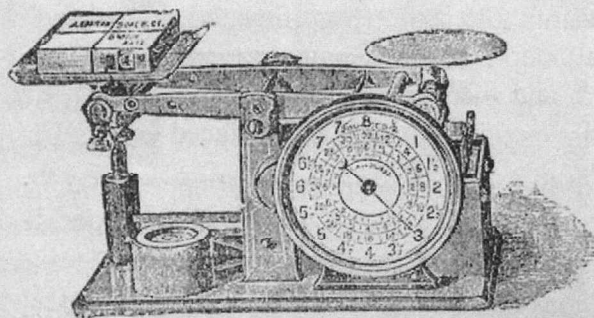
See description and illustration in this number of *BOOKS AND NOTIONS* on page 142.

The Trade would do well to order a sample Scale and push it with their best customers. The action is simply perfect, nothing can get out of order. Every Bank, Post Office and large business office will order one.

PRICE, \$6.00. DISCOUNT TO THE TRADE. SEND FOR CIRCULAR

Figure 8. ▲▲ Cook's Automatic Postal Scale ad in *Books and Notions*. April, 1885. p. 145.

COOK'S Automatic Postal Scales



Indicate instantly the Weight and Postage to be paid
on Letters, Newspapers and Parcels.

NO SMALL LOOSE WEIGHTS REQUIRED.

The Novelty of these Scales consists in their **SELF ADJUSTING WEIGHTS** and **REGISTERING DIAL**, giving instantly the weight of article and the amounts opposite to be paid.

A single indicator tells the whole story by means of four circles of accurately divided spaces, properly figured.

The exterior circle shows the weight by half ounces; the next the postage required for Letters; the third, that for Book Post, and the inner circle indicates the cost of Parcel Post. All calculated for Canadian Postal Rates.

PRICE (Nickel plated) \$6.00 EACH.

TRADE SUPPLIED.

HART & COMPANY,

Sole Agents for Dominion,

31 & 33 KING ST. WEST, TORONTO.

Figure 9. ▲▲ Cook's Automatic Postal Scale ad in *Books and Notions*. July, 1885. p. 190.

This was followed by essentially the same illustrated ad for Cook's Automatic Postal Scale in two different Canadian publications in May and July 1885, which pointed out for the first time that the scale is nickel-plated.¹⁸ See Figure 9.

Fourth Design-AMERICAN SCALE CO. LYNN, MASS. July 1885

This is the same as the Third Design, but with a dial change in the first class letter rate from 4 cents per ounce to 2 cents per ounce, which took place on July 1, 1885. The dial is no longer solid, but has a one inch diameter hole in the center, perhaps to minimize rubbing by the needle indicator, and this central dial hole is used on all further designs. There is also no reference to the 1882 patent on the dial. Scales are stenciled the same as the Third Design: **AMERICAN SCALE CO. LYNN, MASS.**

There are two variations of the Fourth Design:

Variant One. The first, and earliest, has the two pans mounted on turned columns, and the pivots under the right hand weight pan are cut off both inside and outside the beam, just like the Third Design. There are just over 100 individual parts to the scale as I learned during restoration of my scale. There are four known examples of Variant One of the Fourth Design, one of which inexplicably has a stamped serial number, 1077. See Figures 10a-10e.

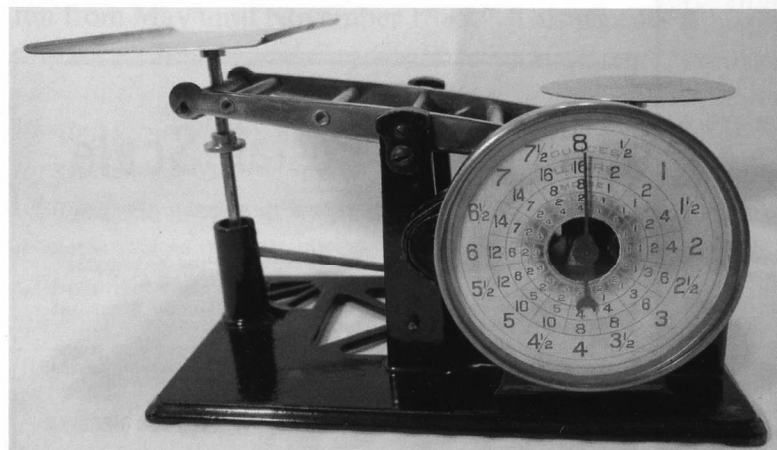


Figure 10a. ▲▲ Fourth design, variant 1-overview. Steve Beare Collection.

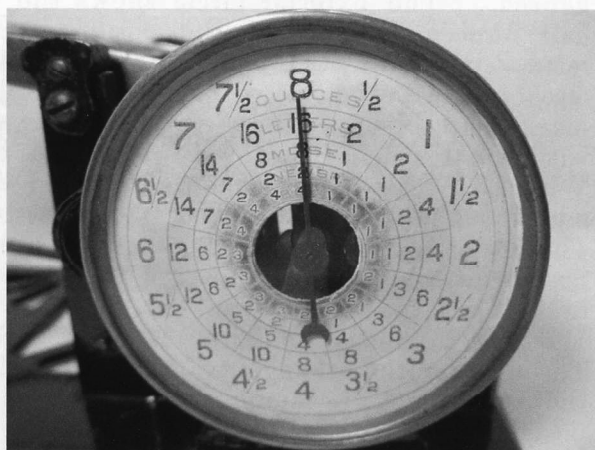


Figure 10b. ▲▲ Figure 10b. Fourth design, variant 1-dial detail. Steve Beare Collection.

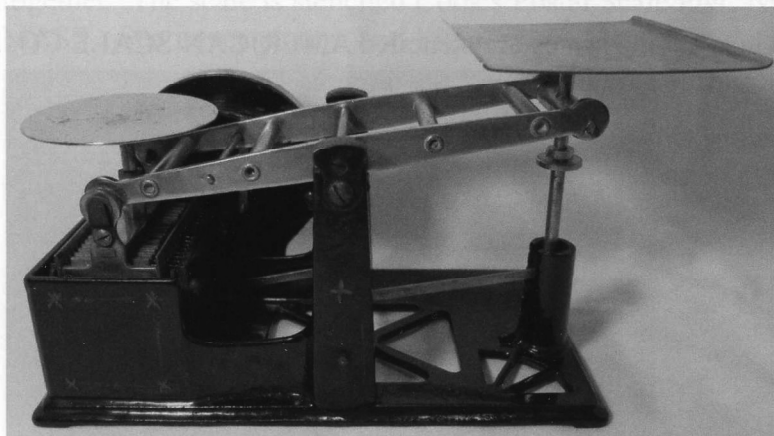


Figure 10c. ▲▲ Fourth design, variant 1-rear view. Steve Beare Collection.

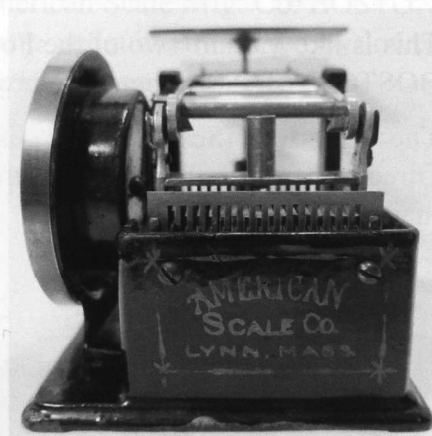


Figure 10d. ▲▲ Fourth design, variant 1-end view, lifting weights at rest. Steve Beare Collection.



Figure 10e. ▲▲ Fourth design, variant 1-end view, lifting weights raised. Steve Beare Collection.

Variant Two. The two pans are mounted on cast columns, each with a hole through which run long pivot shafts. Cast columns were used on all subsequent Cook scales, undoubtedly to reduce manufacturing costs. There are four known examples of Variant Two. See Figures 11a-11c.

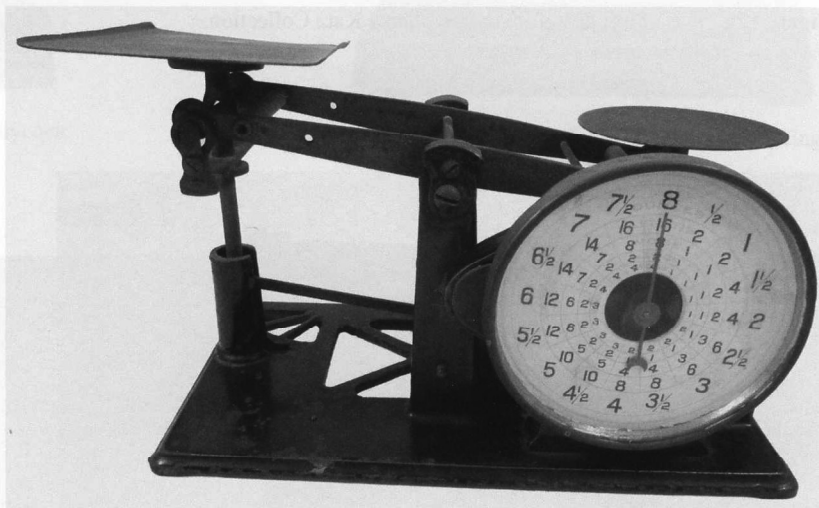


Figure 11a. ▲▲ Fourth design, variant 2-overview. Berning Collection.

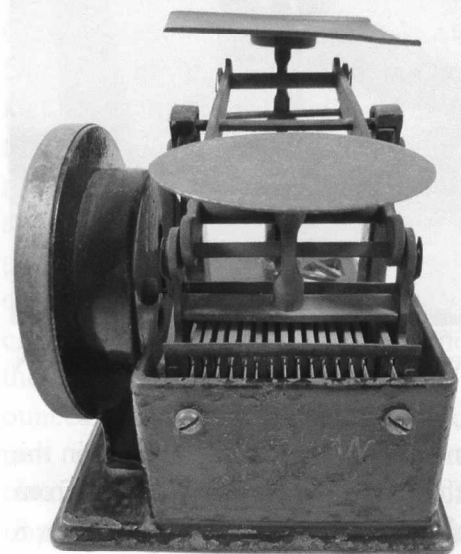


Figure 11b. ▲▲ Fourth design, variant 2-end view. Berning Collection.

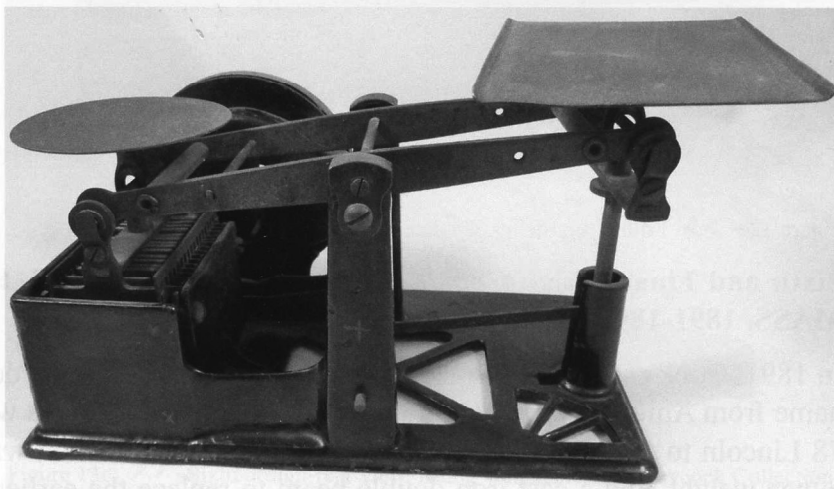


Figure 11c. ▲▲ Fourth design, variant 2-rear view. Berning Collection.

Fifth Design-AMERICAN SCALE CO. BOSTON, MASS. 1885-1890

This is like Variant Two of the Fourth Design, except that the scales are stenciled AMERICAN SCALE CO. BOSTON, MASS. There are three known examples of the Fifth Design. See Figures 12a-12e.

The American Scale Co. is listed in the Boston City Directory from 1885-1890, where Cook is listed as either manager or agent.¹⁹

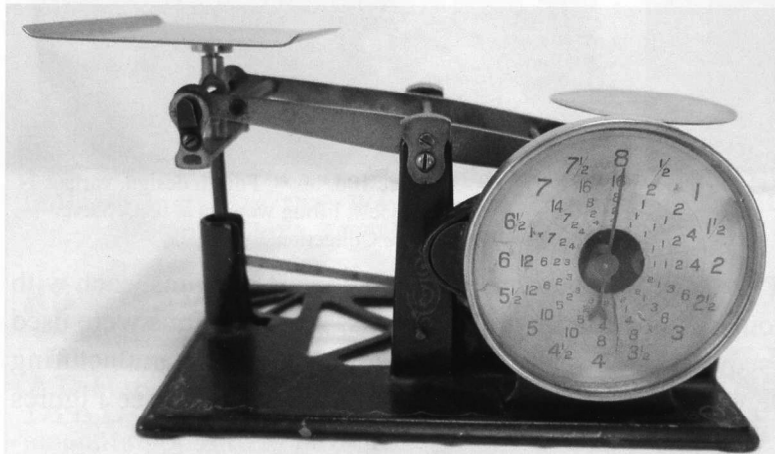


Figure 12a. ▲▲ Fifth design-overview. Jerry Katz Collection.

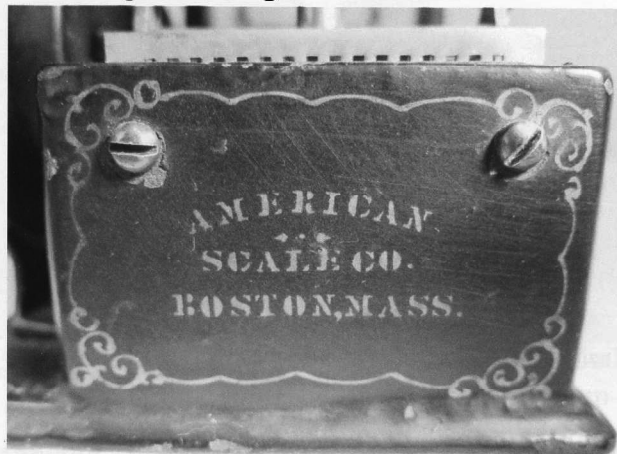


Figure 12b. ▲▲ Fifth design-end view. Jerry Katz Collection.

Figure 12c. >> Fifth design-weight pan detail. Jerry Katz Collection.

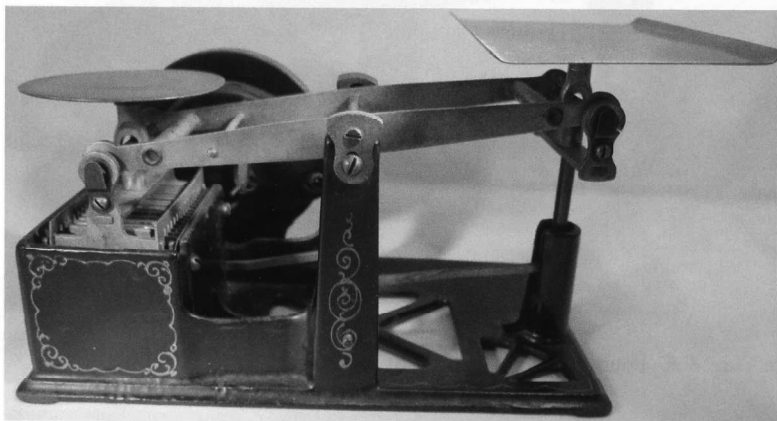


Figure 12d. ▲▲ Fifth design-rear view. Jerry Katz Collection.

Figure 12e. >> Fifth design-letter pan detail. Jerry Katz Collection.



Sixth and Final Design-Cook's Postal Scale PAT. NOV. 21 1882 American Scale Mfg. Co. BOSTON MASS. 1891-1896

In 1891, Cook radically changed the lifting weight postal scale design coincident with a subtle change in the name from American Scale Co. to American Scale Mfg. Co. as well as a change in the Boston location from 78 Lincoln to 118 South. The cast iron base is much thicker, with a small integrally cast post to hold an 8 ounce weight, and a cast iron double beam to replace the earlier beam of two stamped brass plates riveted

together. The scale is stenciled Cook's Postal Scale PAT. NOV. 21 1882 American Scale Mfg. Co. BOSTON MASS. See cover picture and Figures 13a-13d. These design changes were undoubtedly driven by lower



Figure 13a. ▲▲ Sixth design-end view, lifting weights at rest. Laycock Collection.



Figure 13b. ▲▲ Sixth design-end view, lifting weights raised. Laycock Collection.

manufacturing costs. The subtle company name change is noted in the Boston City Directory, and validates its use from 1891 to 1896.²⁰ There are no further Boston City Directory listings of the American Scale Mfg. Co. after 1896. Three examples of this Sixth and final design are known.

Cook did not appear in the Boston City Directory during 1891-1896, but was a resident of Lynn and is listed there as an inventor. Coincident with the change in company name, Cook or others took out ads for agents in Oregon and New York newspapers starting in late February 1891, which describe a new patented automatic scale capable of weighing up to 4 pounds, even though the dial still went up to only 8 ounces.²¹ Despite the 1891 ads alluding to a new patented scale, no new patent was obtained. Perhaps one was applied for as an improvement, but was rejected. Strangely, the old patent date of November 21, 1882 is



Figure 13c. ▲▲ Sixth design-rear view, lifting weights raised. Laycock Collection.

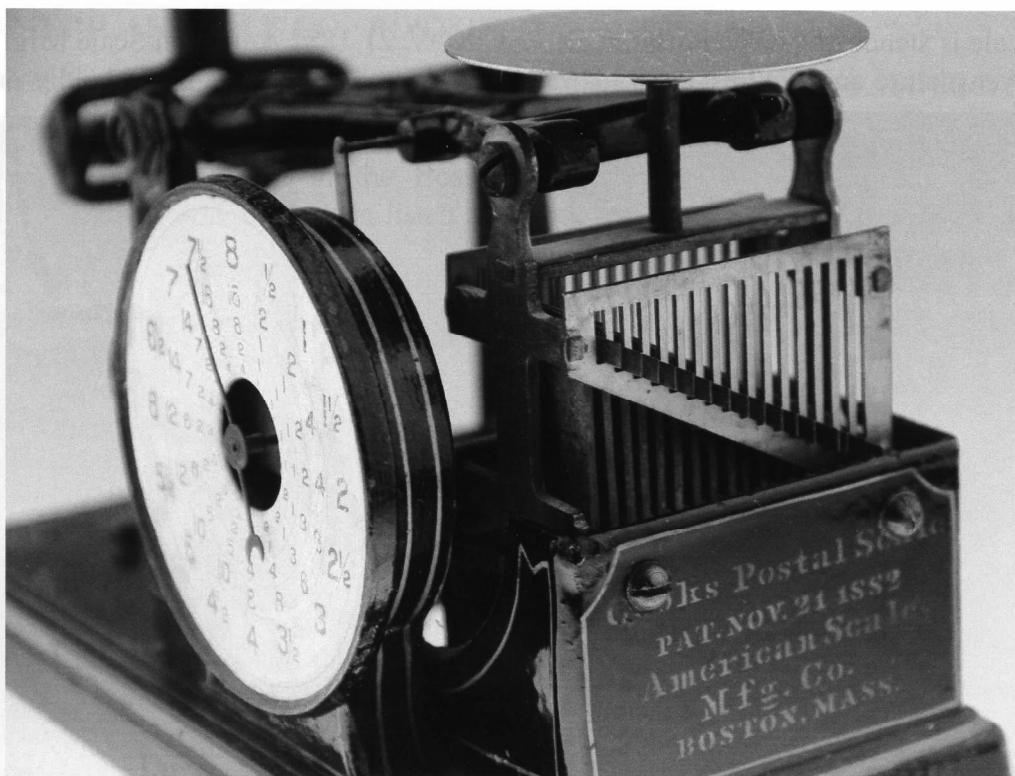


Figure 13d. ^^ Sixth design-overhead end view, lifting weights raised. Laycock Collection.

stenciled on these 1891-1896 American Scale Manufacturing Company scales rather than the much more closely allied patent design of October 6, 1885. Cook investigated relocating the American Scale Manufacturing Company from Boston to either Webster or Haverhill, Massachusetts in September, 1892, but no such move was made.²²

Cook appeared in the Lynn City Directory from 1897-1899 with the Challenge Tube Cleaner Company [cleaning of steam boiler tubes], which evolved into the Challenge Manufacturing Company from 1900-1902, and then the Challenge Pencil Sharpener [Company] from 1903-1907. Cook patented the Challenge pencil sharpener in 1900, which simultaneously used a blade to cut the wood and sandpaper to sharpen the lead. One example recently sold in the mid 5 figures. From 1909-1912, the latest available Lynn City Directory, Cook's occupation was listed simply as scales and pencil sharpeners.²³ It appears unlikely the scales referred to were of the sophisticated weight lifting variety, as no advertisements have been located for these in this late period. Moses G. Cook is listed in the 1900 Lynn census as inventor, and in the 1910 Lynn census as a Manufacturer of Pencil Sharpeners. His last patent, for a speedometer, was applied for on Dec. 17, 1913 at age 75. He died in 1924 at age 87, and is buried in the Cook family grave in Ashfield, Massachusetts.

Acknowledgments:

Sincere appreciation is due to the following for sharing pictures of Cook's Automatic Postal Scales in their collections: Bill & Jan Berning, Kurt Beyreis, Willie Edens, Jr., Michael Goodman, Diana Crawforth Hitchins, Bob Jibben, Jerry Katz, the Laycock family, James Reeve, Les Schneiderman, Skinner's Auction, and Eric & Judy Soslau. Grateful acknowledgment is also expressed to Jan Berning for pointing out the *Banker's Magazine* article, Bryan Draper, conservator of Rare Books at the University of Maryland Library for a scan of *The Week*, Natalya Rattan, Fisher Rare Book Library, University of Toronto for scans of *Books and Notions*, and Stuart Walker, former conservator of Rare Books at the Boston Public Library for lookups of *Lynn City Directory* years not on ancestry.com.

Notes and References:

1. *Official Register of the United States, Containing a List of the Officers and Employees in the Civil, Military and Naval Service*, 1863-1959. p. 625. *1860 Census of the Population* Department of the Interior, Census Office. 1864. p. 222. Ashfield, Franklin County, population 1302. *1870 Census of the Population* Department of the Interior, Census Office. 1872. p. 218. Ashfield, Franklin County, population 1180. *Massachusetts Register & Business Directories* for 1869, 1874 and 1878. *History of Connecticut Valley in Massachusetts*. Vol. 2. Philadelphia: Louis H. Everts, 1879. p. 295.

2. Frederick G. Howes. *History of the Town of Ashfield, Franklin County, Massachusetts from its Settlement in 1742 to 1910*. Published by the town. p. 214.
3. Greenough, Jones & Co. *New Directory of New Haven for 1874-75*. New Haven, cr. 1874.
also *Benham's New Haven City Directory for 1875-76*. New Haven, cr. 1875.
- Moses Cook, pres. Cook Bobbin Winder Co., boards 24 Hamilton
- Moses G. Cook, sec'y, Cook Bobbin Winder Co., boards 142 Chapel.
4. A Canadian patent was also issued for this scale in 1883. Canadian patent 18,235 Canadian Patent Office Record. Vol. 12, 1884. issued December 4, 1883 to Moses G. Cook, Ashfield, Mass. p. 2. The drawing, p. 22, is the same as Cook's 1882 American patent.
5. *Lynn Directory*. 1882-1887. Joseph N. Smith, shoe manufacturer, 226 Union. Smith was "a capitalist of Lynn and is interested in many commercial and financial, as well as other philanthropic enterprises in that city and elsewhere." Commercial and Financial New England Illustrated. Boston: *Boston Herald*. 1906, p. 215.
6. *Lynn City Directory*.
1880, Moses G. Cook, traveling salesman, b. 64 Liberty
1882, Moses G. Cook, traveling salesman, 226 Union, b. 23 Broad
7. U. S. Post Office <http://about.usps.com/who-we-are/postal-history/rates-historical-statistics.htm>
8. *Lynn City Directory*. July, 1883.
Moses G. Cook (American Scale Co.), 226 Union, boards 23 Broad
American Scale Co., Manufacturers of postal and merchandise scales, 226 Union, ad p. 606
9. In 1883, Samuel Aborn of Lynn was an "agent for Cook's Automatic Postal Scale, manufactured by the American Scale Co., 226 Union Street, Lynn, Mass." Walter Eliot Thwing. Thwing: a genealogical, biographical and historical account of the family. Boston 1883. p. 308.
10. *Lynn City Directory*. 1885
Moses G. Cook (American Scale Co.), rear 226 Union, rms 259 Essex
American Scale Co., Manufacturers of postal and merchandise scales, rear 222 Union, see p. 620 for ad.
11. See also *EQM* p. 539, for the English patent equivalent, no 2040, Feb. 13, 1885. M. G. Cook-half assigned to A. G. Brookes. Michael Crawforth had not seen an example of this scale at the time, 1983.
12. *The Daily Picayune*. June 6, 1885. The Late Exposition. American Scale Company, Lynn, Mass.-Medal of first class for postal scale; *Official Catalogue of the World's Industrial and Cotton Centennial Exposition*. New Orleans: J. S. Rivers, 1885. p. 71. American Scale Co., Lynn, Mass. Postal Scale; *Banker's Magazine and Statistical Register*. Volume 40. New York: Homans Publishing Co., February 1886, page 634.
13. *International Inventions Exhibition. Official Catalogue*. London: William Clowes & Sons, 1885. p. 292. American Scale Co., Lynn, Mass. Automatic Postal Scales.
14. *Bazaar Exchange and Mart, and Journal of the Household*, Volume 33. London, August 10, 1885. p. 159.
15. *Grip*. Toronto: Grip Printing & Publishing Co. Vol. 24. April 11, 1885.
16. *Books and Notions. Organ of the Book, Stationery & Fancy Goods Trades of Canada*. vol 1, no. 9, April, 1885. p. 142.
17. *Books and Notions. Organ of the Book, Stationery & Fancy Goods Trades of Canada*. vol 1, no. 9, April, 1885. p. 145
18. *The Week*: Toronto: C.B. Robinson, 1885. Vol. 2, no. 23, May 7, 1885. p. 367; *Books and Notions. Organ of the Book, Stationery & Fancy Goods Trades of Canada*. Vol 1, no 12, July, 1885 p. 190.
19. *Boston City Directory*
1885-Moses G. Cook, manager American Scale Co. 3½ Bromfield, h. at Lynn
American Scale Co., M. G. Cook, manager, 3½ Bromfield
1887-American Scale Co., 113 Devonshire, rm. 29
1889, Moses G. Cook, agent, American Scale Co., 78 Lincoln, h. at Lynn
American Scale Co., 78 Lincoln
1890-American Scale Co., 78 Lincoln
- Lynn City Directory*
1886, Moses G. Cook, r. 259 Essex
1887, Moses G. Cook, inventor, r. 259 Essex
1888, Moses G. Cook, inventor, r. 551 Essex
1889, Moses G. Cook, inventor, r. 551 Essex
1890, Moses G. Cook, inventor, r. 565 Essex

20. Boston City Directory. 1891-1896. American Scale Mfg. Co. 118 South.

21. "Cook's Automatic Postal Scale. Just placed upon the market, indicates at once the weight of parcels to 4 pounds and the exact postage required for same, whether letters, papers, books or merchandise; a valuable and ornamental article of office furniture. Live agents wanted for same by the Wait-Roberts Co., General Agents for Oregon, 4214 Morrison st. *Morning Oregonian*. Portland. February 26, 1891; "Agents.-First Class Men Wanted to Sell a new patented automatic postal scale on commission. No. 2 West 14th st., room 1, between 2 and 4 P. M." *New York Herald*. March 11, 1891; "Wanted-Salesmen to Sell a new patented automatic postal scale on commission. None but those meaning business and having references need apply. No. 2 West 14th st., room 1, between 2 and 4 P. M." *New York Herald*. March 15, 1891.

22. *Worcester Daily Spy*. Sept. 14, 1892. The American Scale Manufacturing Company, of 112 State [sic] street, Boston, is in Communication with the Board of Trade relative to locating at Webster; Boston Daily Advertiser. Sept. 17, 1892. The American Scale Manufacturing Co. is talking of removing to Haverhill.

23. *Lynn City Directory*

1897, Moses G. Cook, Challenge Tube Cleaner Co., rear 853 Washington, h. 565 Essex

1898, no directory on ancestry

1899, Moses G. Cook, Challenge Tube Cleaner Co., 531 Washington, h. 565 Essex

1900, Moses G. Cook, Challenge Manufacturing Co., 533 Washington, h. 565 Essex

1901, Moses G. Cook, Challenge Manufacturing Co., 533 Washington, h. 565 Essex

1902, Moses G. Cook, Challenge Manufacturing Co., 49 Arch, h. 565 Essex

1903, Moses G. Cook (Cook & Grover). 49 Arch, h. 565 Essex

Cook & Grover (M. G. Cook, B. E. Grover) Challenge Pencil Sharpener, 49 Arch

1904-no *Lynn City Directory* on ancestry.com

1905, Moses G. Cook (Cook & Grover). 49 Arch, h. 565 Essex

Cook & Grover (M. G. Cook, B. E. Grover) Challenge Pencil Sharpener, 49 Arch

1906-no *Lynn City Directory* on ancestry.com

1907-Moses G. Cook (Cook & Grover). 49 Arch, h. 565 Essex

Cook & Grover (M. G. Cook, B. E. Grover) Challenge Pencil Sharpener, 49 Arch

1908-no *Lynn City Directory* on ancestry.com

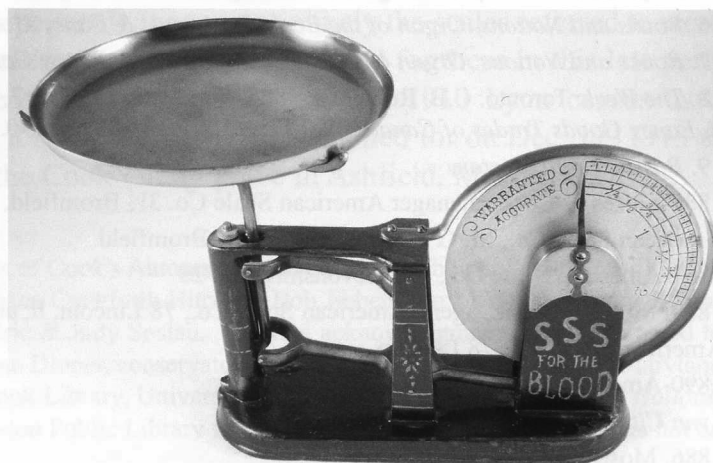
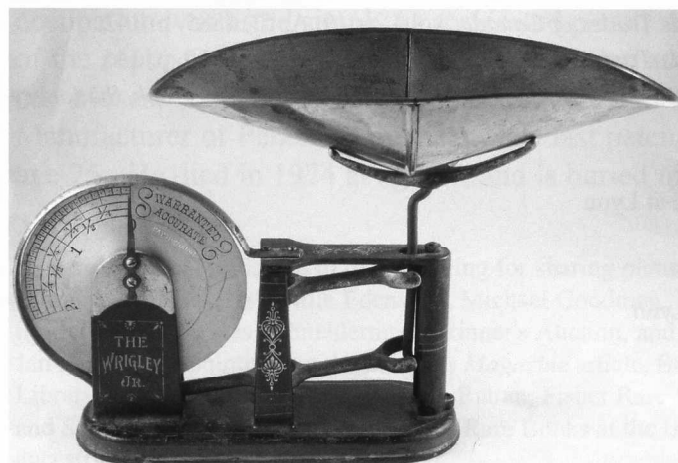
1909-Moses G. Cook, scales and pencil sharpeners, 132 Central av., bds. 92 Washington.

1910-Moses G. Cook, scales and pencil sharpeners, 132 Central av., bds. 92 Washington.

1911-Moses G. Cook, scales and pencil sharpeners, 132 Central av., bds. 17 Franklin

1912-Moses G. Cook, scales and pencil sharpeners, 132 Central av., bds. 17 Franklin

Showcase



Counter shop scales were often used for advertising as is true for the two fine examples shown here. The circular rotating aluminum dial is graduated by ounces to two pounds. A spring loaded mechanism is linked to a cam drive. These scales were used by the Wrigley Gum and SSS Tonic companies as premiums to shop owners who ordered a specified amount of product. Medicines that claimed to build up your blood were popular in the late 1800s to early 1900s.

Larry Press & Lesley N. Firth Collections.

The Myers Collection of Local Verification Marks

BY NORMAN BIGGS

The Collection

Robert Myers, who died in 2015, was a true collector. Over the past twenty years he had acquired many interesting scales and weights, and one part of his collection was a group of several hundred nineteenth-century weights with distinctive verification marks. These marks were stamped by the inspectors appointed by local authorities, which ranged from large counties like Lancashire to small places like Aldeburgh. For many years collectors have struggled to identify these marks, many of which are either cryptic, comprising some initial letters, or symbolic, comprising a shield, a castle, or some other quasi-heraldic device. A fine collection of these weights had been formed by ISASC member Geoff Newell in the latter part of the twentieth century, and after his death in 2002 some of them were bought by Bob Myers, who continued to add interesting specimens regularly, mainly by rummaging through boxes at Antique Fairs and Markets. A few of the highlights are illustrated below, but it should be stressed that the significance of the collection lies not in individual specimens but in the way that the entire group illuminates an important part of commercial life in the nineteenth century.

ALDEBURGH



Figure 1. ▲▲ A 4 oz bronze weight stamped in London and the Borough of Aldeburgh.

Aldeburgh is a small town on the east coast of Suffolk. It was traditionally regarded as a borough, and in 1826 it acquired a set of the new Imperial Weights and Measures. Its status as a borough was not confirmed by the Municipal Corporations Act of 1835, but nevertheless, it appointed an Inspector of Weights and Measures, Robert Lee, who also held the office of 'alefounder'. Inspectors were appointed regularly for many years thereafter. They stamped weights with marks like the one shown here on a weight previously stamped by the Founders Company in London. A similar mark with BURG instead of BORO has been seen, but these marks are both rare. In 1879 Aldeburgh was assigned the number 206 in the new uniform system of marks, and in 1883, at long last, it was officially incorporated as a municipal borough. Sadly, the right to inspect weights and measures had to be given up in 1889, when a new Weights and Measures Act decreed that no place with less than 10,000 inhabitants could carry out this function.

NEW ROMNEY



Figure 2. ▲▲ A 4 oz bronze weight stamped in London, Kent, and the Borough of New Romney.

New Romney is a small port on the south coast of Kent. Its role as a Weights and Measures Authority was similar to that of Aldeburgh, with the extra complication that New Romney was one of the historic Cinque Ports. (The 'Borough' of New Romney is quite distinct from the adjacent 'Liberty' of Romney Marsh, an even more anomalous authority.) The inspector appointed in 1835 was John Wiles, a blacksmith, and in 1866 it was Gilbert Jeffrey, a watchmaker. Jeffrey reported that he stamped only 66 weights in that year, so it is not surprising that the New Romney mark is rare. As shown here, there were three elements: a ship, the letters CNR (Corporation of New Romney), and six small square dots in two rows of three.

READING



Figure 3. ▲▲ A 2 oz brass weight stamped in Reading.

Reading is a large town about 60 km due west of London. Although it is geographically within the county of Berkshire, it was already recognised as a borough in the Domesday Book (1087). The mark of the Reading inspectors was based on the coat of arms of the borough, which depicts the heads of five 'maidens' and the letters R E. It was customary for the inspectors to add their own initials to the borough mark. So we find RPI (Robert Palmer Inspector, 1835-39), IMI or JMI (John Middleton Inspector 1839-55) and ISI (John

Saunders Inspector 1856-71). The initials shown here are WCI (William Coxhead Inspector 1871-90), and must have been stamped before 1880, since the heraldic mark was replaced by the uniform mark with number 254 around that time. In 1890 Coxhead had to give way to an inspector who had passed a stiff qualifying examination under the Weights and Measures Act of 1889.

STRATFORD-UPON-AVON



Figure 4. ▲▲ A ¼ oz brass weight stamped in Stratford.

Stratford is famous as the birthplace of William Shakespeare. Its history as a Weights and Measures Authority is similar to that of Aldeburgh and New Romney, although it was officially granted the status of a municipal borough in 1835. Up to 1889 inspectors were appointed regularly, latterly the post being held by the superintendent of the borough police force. The Myers example shown here is the only weight with a Stratford mark known to the author of this article. The device is a shield with a chevron and three leopards' heads, based on the arms of the borough.

WINDSOR

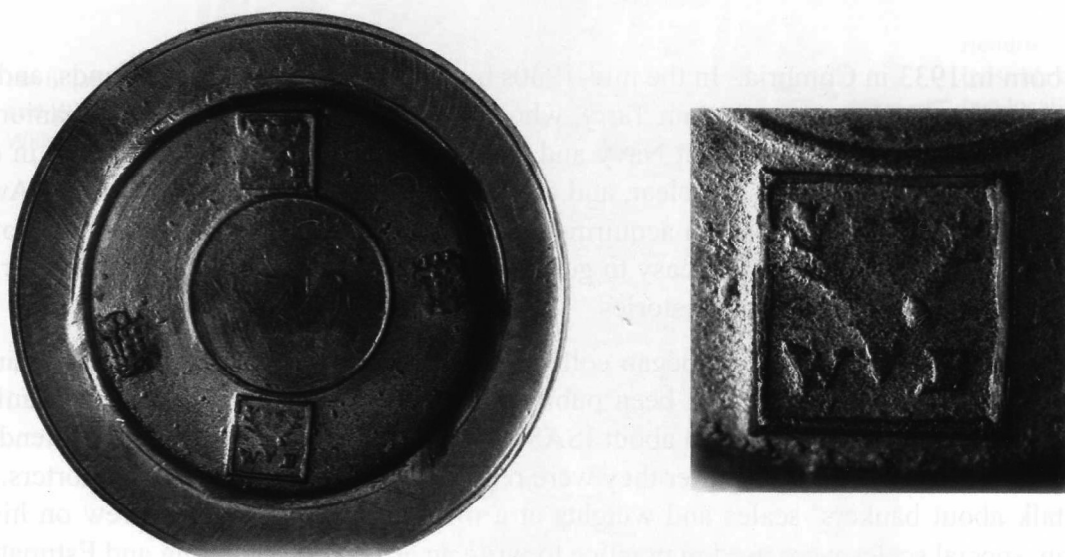


Figure 5. ▲▲ A 4 oz bronze weight stamped in Westminster and Windsor.

Windsor, like Reading, is a town in Berkshire. Although fairly small, it is famous as the residence of the royal family since the Middle Ages. The arms of the borough comprise a stag's head with a quartered shield between the antlers. This device was used as a verification mark, the example shown here also displaying the initials WB. These initials might stand for Windsor Borough, but it is more likely that they signify William Berridge, a local ironmonger, who was appointed as inspector of weights and measures in 1834.



Figure 6. ▲▲ A 2 oz bronze weight with unidentified marks.

The old non-uniform verification marks were mainly phased out in the 1880s, partly because of the difficulty of attributing them to the relevant local authority. This difficulty has persisted, despite the work of many collectors, the publication of Carl Ricketts' book,¹ and this author's book and online directory.² The example from the Myers Collection shown here is particularly obscure. It does have one small identifiable mark, a crown above WR and SR in small letters. This is known to be the mark of the county of Lancashire, the WR referring to King William IV and the SR to Salford hundred, Rochdale division. But the three large marks, a crowned RS, a fouled anchor, and a wavy dagger, are as yet unidentified. It is tempting to associate them with a locality covered by the Lancashire mark, possibly the Manor of Rochdale which is known to have operated as a Weights and Measures Authority. Another suggestion is the county of Radnorshire. But no link between the distinctive marks on the weight and the heraldic devices used in these places has been found.

Robert Myers

Bob Myers was born in 1933 in Cumbria. In the mid-1930s his family moved to the Midlands, and he attended a local grammar school. There he met Ann Tarry, who was to become his lifelong companion and wife. After leaving school he entered the Merchant Navy and rose quickly through the ranks. But, in due course the attractions of a settled home life became clear, and around 1960 he took up a position in the Avery organisation. Fortunately this did not prevent him acquiring a serious interest in weighing machines of all kinds. Later he was employed by 3M. He found it easy to get along with all kinds of people, and his varied experiences provided him with a rich fund of good stories.

He retired in 1994 and around that time he began collecting antique scales and weights. By chance he discovered that a book on *English Weights* had been published by Paul and Bente Withers in Llanfyllin, and, while visiting them to buy a copy, he learned about ISASC. Soon afterwards Bob and Ann attended a meeting of the Society in Winchester, and thereafter they were regular attenders and staunch supporters. Bob gave an entertaining talk about bankers' scales and weights at a meeting in 2009, and he drew on his technical knowledge of how special scales were used in practice to write an article on 'Counting and Estimating' which appeared in EQM in 2011 (pages 3687-3689 and 3761). He will long be remembered as a friend and comrade.

References

1. Carl Ricketts with John Douglas, *Marks and Marking of Weights and Measures of the British Isles* (Taunton, 1996). Note that the Aldeburgh marks shown on page 193 of this book are not true verification marks.
2. Norman Biggs, *Local Verification Marks on Weights: The Administrative Background* (Llanfyllin, 1996). The website with detailed information about the individual localities is www.maths.lse.ac.uk/Personal/norman.

The Lindermans of Amsterdam 4 BY STEPHEN BARNETT

The first part of this article recounted how I became interested in learning more about the Lindermans, the challenge of attributing their scales to a particular member of that family and the approximate date of the scale. It compared some features of the ten samples. Part II compared the scale boxes, the beams and pans and the accessories that came with them for ten samples of diamond and coin scales to determine what features and information on them can help with this attribution. Part III continued the comparison by examining the weights that came with the scales, the markings on coin scale boxes and the labels on the inside of the box lids. This final part provides information about the Linderman family, and, with what we learned earlier about the scales' features, provides conclusions about which member of the family made each of the scales and about when.

The Linderman Family

Reference 1 and, principally Reference 2 provide information about the Linderman family, their business addresses and period of time that they worked at that address. They all lived and worked in the same neighborhood of Amsterdam, roughly within a 1.5KM diameter circle. (Figure 72) The reader will notice the variations of spellings of the names of streets and canals not only between the various labels, but also in comparison with the modern spelling.

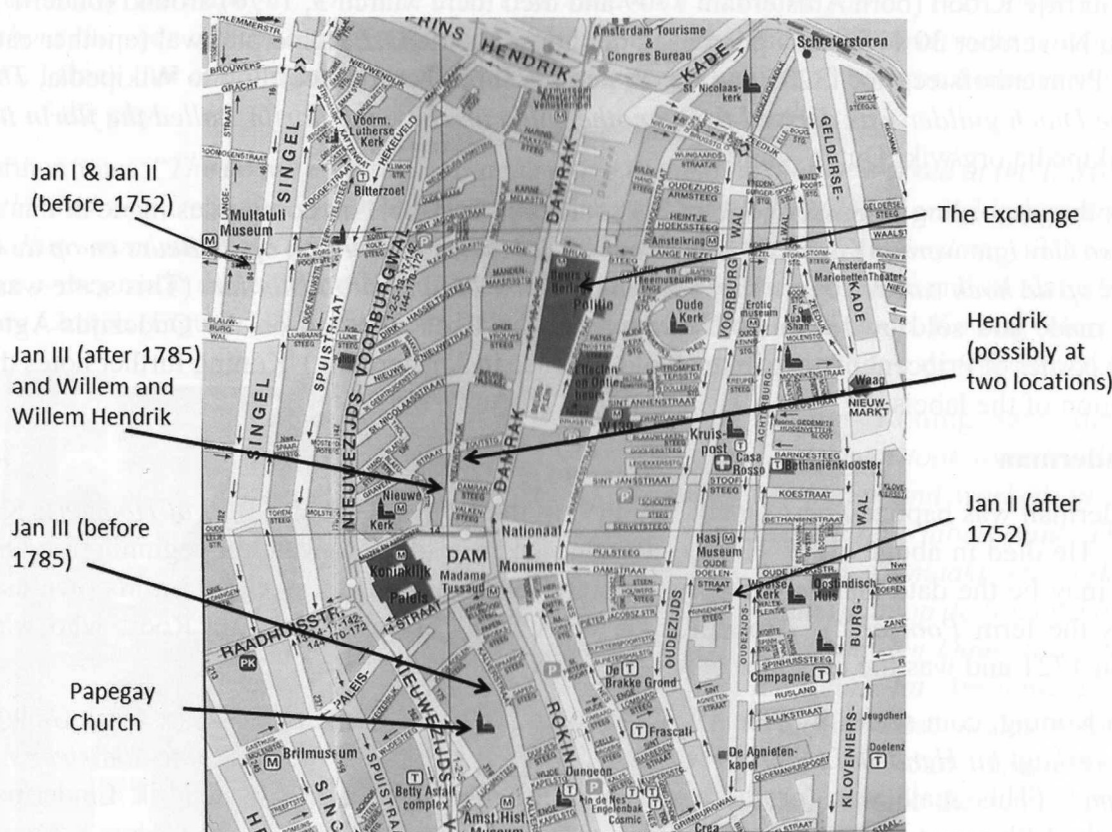


Figure 72. ▲▲ Map of the Lindermans' neighborhood in Amsterdam.

Jan Linderman

Jan Linderman was born in 1673 and died on July 11, 1743. He married Wyburgis Jacobsd Prijt on May 3, 1698. They had at least four children: Jan II (*Jan volgt II*), Gertrudes who was baptized on November 24, 1714; Christina who was baptized on July 8, 1717 (witnessed by Henricus and Christina Linderman who perhaps were Jan's brother and sister-in-law); and Hendrik (*volgt Iibis*) whose baptism was witnessed by Henricus Linderman and Aleydis Schakken.

In 1698 he became a scale maker's apprentice (*balansmakersknecht*). He worked at the corner of the Singel and Korsjespoortsteeg (Korsjes Alley Gateway¹). According to Koning, (Reference 2) very little is known of his work unless some of the work attributed to his son, Jan, is actually his work.

Jan Linderman (II)

Jan Linderman (II) was born in Amsterdam in 1700 and died there on July 21, 1758. Based on box labels and official documents Koning provides the following information in Reference 2. Prior to 1752 he was a scale maker on the Singel at the corner of Korsjespoortsteeg. The label says: *Dese Gewigte werden Gemaakt en verkogt bij Johannes Linderman op de Beurs en op de Singel op de hoek van Corsjessteeg in de Goude Balans Tot Amsterdam*. (This scale was (or these scales were) made and sold by Johannes Linderman at the Exchange and on the Singel at the corner of Corsjessteeg (Corsjes Alley) in the Gold Balance in Amsterdam).

He married Gerritje Kroon (born Amsterdam 1709 and died there March 3, 1776) around (ondertr.) January 17, 1744. On November 30 1752 they purchased the house on the O.Z Achterburgwal (another canal) at the corner of Princenhofsteeg for f3200 and he opened his shop there. According to Wikipedia, *The symbol f or fl. for the Dutch guilder was derived from another old currency, the florijn, called the florin in English.* (https://en.wikipedia.org/wiki/Dutch_guilder)

Koning notes that according to Sassen (one of his sources²), the labels on coin scales made at this new location read: *Dese Gewigte werden Gemaakt en verkogt bij Johannes Linderman op de Beurs en op de Oudezijds Agterburgwal op de hoek van de Princenhofsteeg in de Goud Balans tot Amsterdam* (This scale was (or these scales were) made and sold by Johannes Linderman at the Exchange and on the Oudezijds Agterburgwal (Canal) at the corner of Princenhofsteeg in the Gold Balance in Amsterdam.) Koning further notes that Sassen has a description of the labels.

Hendrik Linderman

Hendrik Linderman was baptized on August 14, 1719, at the Roman Catholic *Hall of Hoorn* (R.K. *Stadhuis van Hoorn*³). He died in about 1785. He was a scale maker in the Nieuwendijk beginning on October 30, 1744. (This may be the date that he ended his apprenticeship and began working on his own as a master. (Koning uses the term *Poorter*.)⁴) Around January 17, 1744 he married Maria Roos, who was born in Amsterdam in 1721 and was the daughter of Johan and Gesina Lamberts.

According to Koning, coin scales by Hendrik Linderman have the following address: *Dese Gewigt Werden Gemaakt En verkogt bij Hendrik Linderman op de Nieuwendijk Het Vijfde Huys vande Soutsteeg na de Dam tot Amsterdam*. (This scale was (or these scales were) made and sold by Hendrik Linderman on the Nieuwendijk the fifth house from the Soutsteeg⁵ near the Dam (Dam Square) in Amsterdam.) Again, Koning refers to Sassen for a description of the label.

A carat scale by Hendrik Linderman has the address *Dese Gewigte werden Gemaakt En verkogt te Amsterdam bij Hendrik Linderman op de Nieuwendijk het veertiende huys vanden Dam en op de Zaal boven de Beurs*. (This scale was (or these scales were) made and sold in Amsterdam by Hendrik Linderman on the Nieuwendijk the fourteenth house from the Dam and in the room above the Exchange.)

Koning doesn't say which of these scales is older. Note that when Hendrik Linderman made the diamond scale he advertised that he also used the room above the Exchange. If this was a new business location, then it suggests that the diamond scale was made after the coin scale. But we don't know when he moved and where he started doing business at the Exchange, and changed business addresses on his labels. It is even possible that he did not move to a different location, but simply changed the description of where he worked on the label to make it easier for new customers to find it. Apparently, the houses did not have unique address numbers as they have today.

Jan Linderman (III)

Jan Linderman (III) was Hendrik's son, born in 1745 and died in 1805. He was a scale maker on the Nieuwendijk, starting on his own as a freeman (*Poorter*) on June 20, 1764. In Reference 1, page 175, the authors note that he use Johannes on his labels at first, and later used Joannes as well. From public records, Koning learned that he married Brigetha Smith on about April 6, 1770. She was born in Amsterdam in 1740, died there in 1805, and was *the daughter of Coenraad and NN*. On December 18, 1775 he purchased the house on Nieuwendijk at the second (?) (*Dubbelden*) Worststeeg named the *Rooden Hart* for f11500. Then on March 6, 1781, he purchased the house on Kalverstraat at Nauwe Kapelsteeg (Narrow Chapel Lane) for f 6250.

Koning comments *I think (niem) that he had his own business at the time that his father was alive in the Kalverstraat next to the Papegay, which he later combined with that of his father. Perhaps he started his own business about the year of his poorterrecht 1764.* The literal translation of *Poorterrecht* is *burgher right*. In this context, I think that could mean when he ended his apprenticeship and became a master with citizenship or freedom of the city.

Koning further notes: "*The boxed coin scales that he made in the time that he worked at the Kalverstraat location have the address: Deze Gewigte Worde gemaakt en verkogt bij Jan (Johannes) Linderman op de Beurs en in de Kalverstraat naast de kerk de Papegay in de Goude Balance tot Amsterdam.* (This scale was (or these scales were) made and sold by Jan (Johannes) Linderman at the Exchange and in Kalverstraat next to the Papegay Church (Figure 73⁶) in the Gold Balance in Amsterdam.) And again, Koning refers his reader to Sassen for a description of the label.



Figure 73. ▲▲ Front entrance and façade of the Papegay Church. Notice the parrot on the left hand side.

Further Koning says that *after Jan Linderman took over the business from his father and worked on Nieuwendijk, the address labels said: Deze Gewigte warden Gemaakt en verkogt bij Jan Linderman op de Nieuwendijk het tiende huys van den Dam en op de zaal boven de Beurs tot Amsterdam.* (This scale was (or these scales were) made and sold by Jan Linderman on the Nieuwendijk the tenth house from the Dam and in the room above the Exchange in Amsterdam.) We don't know if this is the house that Jan bought in 1775, or the location of his father's business, or a third location that Jan purchased on Nieuwendijk in about 1785.

Willem Linderman

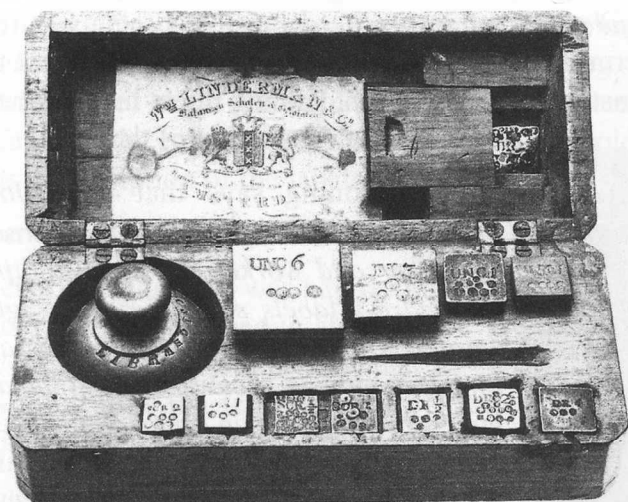
About Willem, Koning writes: *Willem was Jan III's son, born in Amsterdam on June 22, 1782 and died on June 30 1838. He lived on Nieuwendijk at the Dam Square. He married Elizabeth Catharine Siebelitz who was born in Amsterdam in 1780 and died after 1838. The notice of their marriage (ondertrouw) was May 3, 1805. Their daughter Brigitta Linderman was born on January 22, 1807.*

According to Koning, a boxed carat weight set in the Friesch Museum by Willem Linderman bears this address: *W. Linderman op de Nieuwendijk het Tiende huis van den Dam* (W. Linderman at the tenth house from the Dam on Nieuwendijk), the same address as his father. A similar address appears on one of Willem's coin scales (Figure 74) pictured in Reference 1.



Afb. 242. Oude karatgewichten. v.l.n.r.: Amsterdams ± 1780, Amsterdams 17de eeuw, Amsterdams W. Linderman ± 1830, Antwerpen 17de eeuw, Antwerpen 18de eeuw.

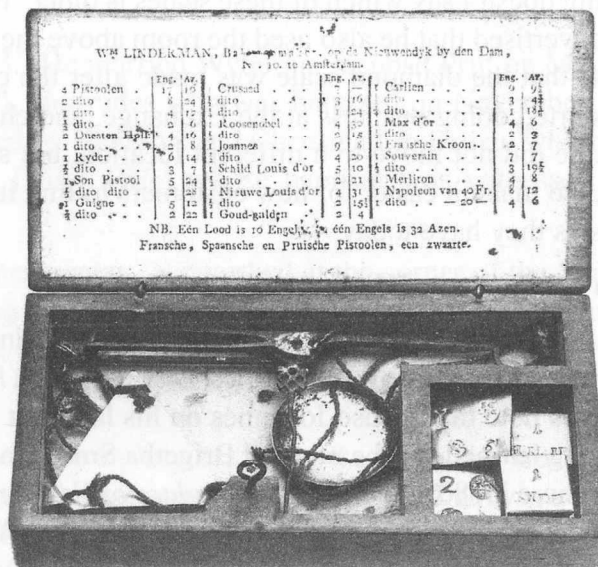
Figure 75. ▲▲ Style of markings on Amsterdam made carat weights. Willem Linderman's (WL) mark is the middle weight.



Afb. 239. Nederlandse doos met metrieke medicinale gewichten (1820-1872). van W. Linderman uit Amsterdam.

Lindermans Doing Business at the Exchange

The labels on their diamond scales say that Jan II, Hendrik and Jan III Linderman made and sold scales at the Exchange. What might this tell us about the Linderman family? In 1602, the Dutch East India Company began to print and sell shares of stock to help finance its operations. (Figure 77) It created a Stock Exchange (Beurs) at which these transactions took place. (Figure 78) As shown in Figure 72, The Stock Exchange was located not far from Dam Square and the locations of the Lindermans' other places of business. I wondered why they would be making and selling their scales, as indicated by the labels, in the Exchange or in the room



Afb. 257. Muntweegdoos van Wm Linderman, met balansje, engelsen, muntgewichten en etiket. Het houten doosje stamt uit het Bergische Land.

Figure 74. ▲▲ Willem Linderman coin scale with its black and white printed label.

Willem Linderman's scale weights are marked "W.L." (Figure 75). He also made boxed apothecary weight sets (Figure 76) and carat weight sets, with the Nieuwendijk address on the label.

Willem Hendrik Linderman

Willem's son, he was born March 24 1814 and died after 1855. He continued the family business as W. Linderman and Company at the same location as his father until 1855.

Figure 76. << Boxed set of Willem Linderman & Co apothecary weights with a black and white printed label with the Amsterdam Coat of Arms in the center.

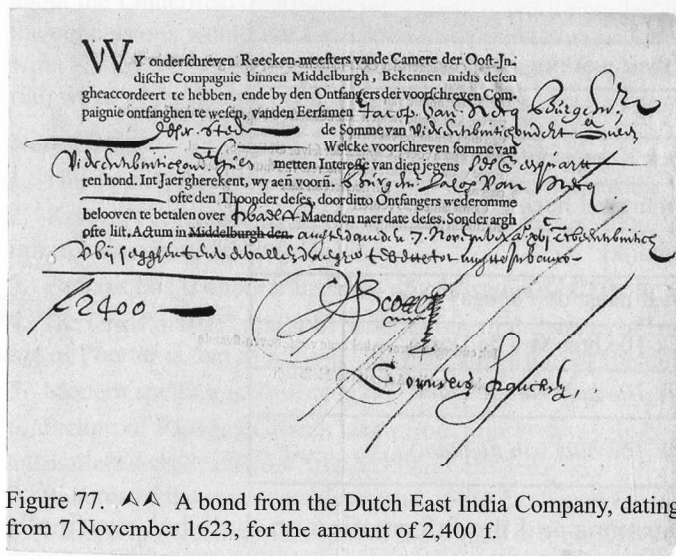


Figure 77. ▲▲ A bond from the Dutch East India Company, dating from 7 November 1623, for the amount of 2,400 f.

The addresses on the labels for Jan II, Hendrik and Jan III raise some interesting questions. From the sample of Jan II's labels that we have seen, it appears that he made and sold the scales at the Exchange throughout his career. Some of his younger brother Hendrik's labels say that he conducted business in the room above the Exchange. We don't know when Hendrik began conducting business there. Were they in competition at two different locations within the Exchange? Did they both conduct business from the room above the Exchange with Hendrik's label being more explicit about the location? According to Jan III's labels, he did business at the Exchange (perhaps with his uncle), and then after he took over his father's business, he used the room above the Exchange. Was the room above the Exchange a more prestigious location, one that showed more affluence?

Attributing and dating our scales

To help us answer the opening questions, *Which Jan Linderman made our scales and when?*, Koning provides the following date information based on the research that he and Houben did on the Linderman family and their products, as well as on the conversion rates for the Guilder (Figure 79).

Uit de verschillende etiketten is het volgende lijst van valuatie op te stellen:

	Jan Linderman Singel —1752	Jan Linderman O.Z. Achter- burgwal 1752—1758	Hendrik Linderman Nieuwendijk 1744—1785	Jan Linderman Kalverstraat 1764—1785	Jan Linderman Nieuwendijk 1785—1805
Roosenobel	11—	11 g 11 st	11—	11 g 11 st	11—
Ducaton	15—	15 g 15 st	15—	15 g 15 st	15—
Hol. Reyder	13—	13 g 13 st	13—	13 g 13 st	14—
Ducaat	5—	5 g 5 st	5—	5 g 5 st	5—
Goud. Guld.	4—	4 g 4 st	4—	4 g 4 st	4—
Merliton	9—	9	9	9	9
Cruysaat	15—	15—	15—	15—	15—
Son Pistool	11—	11 g 11 st	11—	11 g 11 st	11—
Gini	11—	11 g 11 st	11—	11 g 11 st	11—
2 Pistool	18—	18 g 18 st	18—	18 g 18 st	18—
Carolus	12—	12 g 12 st	12—	12 g 12 st	12—
1 Pistool	9—	9 g 9 st	9—	9 g 9 st	9—

above the Exchange. After all, the only things that might have changed hands in the Exchange were pieces of paper and coins, or perhaps commodities of value, such as precious metals, diamonds or other gem stones. This would certainly be a reason for the traders to have access to scales. Perhaps more importantly, it showed the good business sense that the Lindermans had. Their primary customers would have been merchants, traders or jewelers, all of whom would have been wealthy members of the community and likely to frequent the Exchange. Further research might prove that few if any of the other Amsterdam scale makers also advertized a shop in the Exchange. The fact that the Lindermans did have a shop there also indicates the high regard and reputation that they had.



Figure 78. ▲▲ The Amsterdam Stock Exchange (Beurs) building at Beursplein 5.

Figure 79. << Conversion rates foreign coin to Guilder.

Table 5 - Location Of The Linderman's Shops And Dates	
Maker	Dates for their working location ⁸
Jan I ⁹	1698 ± 1744 (Singel)
Jan II	± 1744-1752 (Singel hoek Korsjespoortsteeg)
Jan II	1752-1758 (O.Z. Achterburgwal hoek Princenhoffsteeg)
Hendrik	± 1744-+ 1785 (Nieuwendijk) ¹⁰
Jan III	± 1762-1785 (Kalverstraat naast de Papegay)
Jan III	1785-1805 (Nieuwendijk 10e huis van de Dam)
Willem	1805-1838 (Nieuwendijk 10e huis van de Dam)
W.L. en Comp (Willem Hendrik)	1838-1855 (Nieuwendijk 10e huis van de Dam)

When we combine what is known about each of the Lindermans and the information on the label, we finally answer the question about which Jan made each scale and about when.

Table 6 – Maker And Date Range For Our Sample Of Linderman Scales	
D-1	Made by Jan III between ca 1762 and 1785
D-2	Made by Jan III between 1785 and 1805
D-3	Made by Jan II between ca 1744 and 1752.
D-4	Probably made by Jan III between ca 1785 and 1805 (the part of the address that remains on the label is same as for D-2)
C-2	Jan II between ca 1744 and 1752
C-3	Jan II between ca 1744 and 1752 ¹¹
C-4	Jan III between ca 1762 and 1785
ISASC Coin Scale	Jan III between ca 1762 and 1785

Finally, what can we say about “C-1”, the one without the label? It has all of the characteristics of the other Linderman scales. One of the weights has Jan Linderman's (III) maker's mark and the lid has the characteristic symbol of scales made in Amsterdam. The other Linderman coin scales that we've seen have the larger selection of weights and a *standard* label. Why did it have the smaller selection of weights? Which of the Lindermans made this scale and when? Without the label it is difficult to attribute this one to a particular maker and date range. Perhaps other coin scales like it, but with a label, will be found to help with attributing and dating this one.

Postscript

Doing the research, learning about the Lindermans and the scales that they made and writing this article has been an enjoyable project for me. I greatly appreciate the help, encouragement, information and pictures that were provided. As noted in the article, there are still some questions to be answered. I welcome additional information about the Lindermans and their scales, and particularly examples of their scales that are different from the ones I've used.

Correction

In Part III, and possibly earlier, I described the labels as hand colored lithographs. Steve Beare, in an email to me, said that lithographs were printed from engraved stone and were first used in the 1820s. The Linderman's would have used copper plate engraved labels.

Acknowledgements

I am grateful to Diana Crawforth-Hitchins for providing the information that she had about the Lindermans to get me started and for suggesting that I contact Ritzo Holtman. He provided me with a copy of the Wittkop Koning article with all of its information

about the Lindermans. Without this article and without Koning and Houben's research and their books, this part of the article and the conclusions would not have been as detailed and as definitive. I hope I have done justice to their work. Finally, I thank my wife, Kathy, for her support and encouragement to complete this project. She suggested the way to organize and present the material, when I had trouble organizing it coherently.

Notes

1. This is probably a variant of Corsjes-Steeg or Corsjes Steeg seen on our labels. Or they are a variant of this.
2. Koning's reference to Sasson is "Noord Nederlandsche Muntgewichtmakers: Tijdschrift 1912, biz 83." I could not find more information about this reference.
3. Perhaps this is another instance of a "disguised" Catholic Church.
4. The term "master" might fit better as one of the stages of learning a trade (apprentice, journeyman, master). The additional meaning of Poorter is that as a master, he had citizenship or freedom of the city, which was an honor.
5. Modern spelling is Zoutsteeg.
6. Picture of Papegay Church taken from http://www.yelp.com/biz_photos/de-papegaai-amsterdam?select=FMCodXj8pXyF0kZY3Eed-w
7. Pictures of the stock certificate and of the Exchange taken from Wikipedia.
8. I added italicized information to the source text based on other information in the references and in this article.
9. The Roman numerals are mine to help the reader make the distinctions and link this table to the Family Tree shown in Part 1 and the other information about the family members.
10. Possibly at two different addresses (fifth house from Soutsteeg and fourteenth house from the Dam). If these are indeed different houses, we don't know when he moved.)
11. Although it contains a Jan III verified weight with the dot above the L (Figure 42), the address is for Jan II.

References

1. 2000 Jaar Gewichten In De Nederlanden by D.A. Wittop Koning and G.M.M. Houben 1980
2. De Amsterdamse balansenmakersfamilie Linderman by D.A. Wittop Koning published in Jaarboek Koninklijk Nederlands Genootschap voor Munt-en Penninkunde, 1951 (38, pp.122-126)

SMITH & Co. on the Box

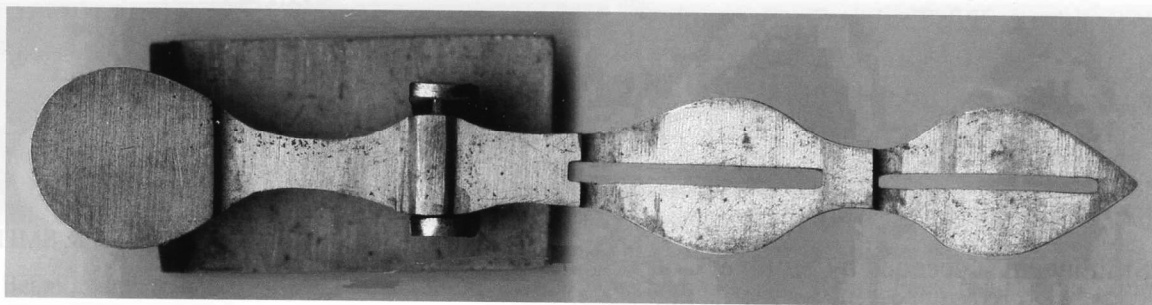
BY MICHAEL FOSTER

London scale-maker and newly identified Sovereign rocker maker.

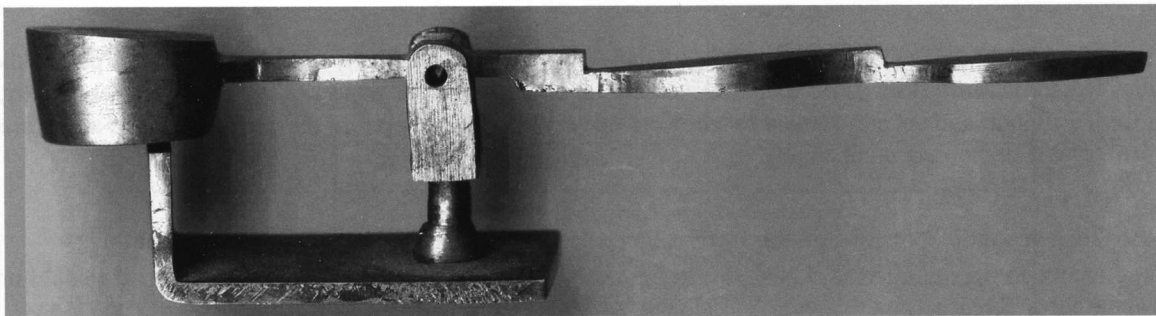
William Smith & Co., scale-maker of London, also sold Sovereign balances in a box with his label.

The following facts are the result of my study of a series of Sovereign rockers, which have no maker marks, crown stamps or sovereign platter labeling. This appears to be typical of London scale and weight makers who apprenticed with the London Blacksmith's Company and produced sovereign balances for a period of time during their careers. Perhaps because they sold their rockers in boxes with their business name on the label and didn't feel the need for die stamps to do further markings that would have added cost to the manufacturing process.

A new rocker and box with label was recently sold on eBay that appears to shed light on the maker of a number of Sovereign rockers that were previously listed by the author as by an unknown maker:



Variant 1: Smith & Co.'s Sovereign balance and box.



Beam Length: 96.9mm. Width at Poise: 15.6mm.
Base Length: 34.4mm. Width: 22.9mm. Poise rest Height: 12.5mm.



Box Length: 106mm Width: 30mm Depth: 30mm

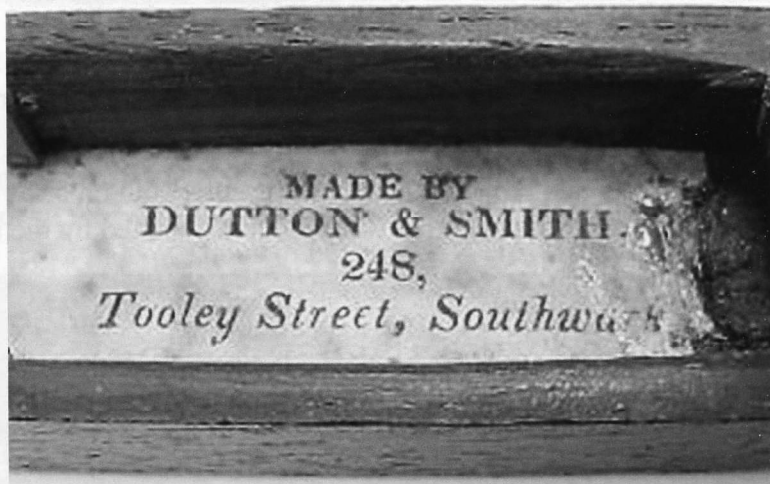
The unusual box label reads: *SMITH & Co.'s / SOVEREIGN BALANCE / TO WEIGH AND GUAGE / WARRANTED TO DETECT A BAD ONE.*

The most likely SMITH & Co., based on the Crawforth Index, is William Smith & Co., scale-maker, London in business from 1832 to about 1850.

From information in the Crawforth Index: William was the son of John Smith, a farmer of Eltham, Kent, which today is part of Greater London. He was bound apprentice to Thomas Williams on 4th January, 1787 in the Blacksmith's Company, London. Reference: MS2881/16. Freed on 6th March, 1806 and admitted to livery 4th February, 1808 as scale beam maker at 248 Tooley St.

William Smith's scale maker business was variously recorded in London Directories as W. Smith at 9 Whitehorse Court, High St. Borough, 220 Tooley St, Borough, and 63 High St. Borough.

In the London P.O. Directory of 1806 it is recorded that the business was succeeded by Dutton & Smith. James Dutton and William Smith were partners from 1806 to 1831/32. From 1806 to 1809 they were listed as successors to W. Smith at 220 Tooley St, Borough. From 1809 to 1826 at 248 Tooley St, Southwark near London Bridge, and from 1826 to 1831 at 281 Tooley St, Borough, London. William Smith II apprenticed to his father on the 4th August, 1825 at the Tooley St. workshop.



Label from Folding Rocker by DUTTON & SMITH

Dutton & Smith were succeeded by Smith & Co. from 1832 to about 1850. Smith & Co. scale and weight makers addresses from London Directories and a label:

Smith & Co.

63 High St. Borough, St. Margaret's Hill, London.

238 High St. Borough, St. Margaret's Hill, London.¹

William Smith died on 4 March, 1847 and William Smith II apparently took over operating the company eventually as Wm. Smith & Co at:

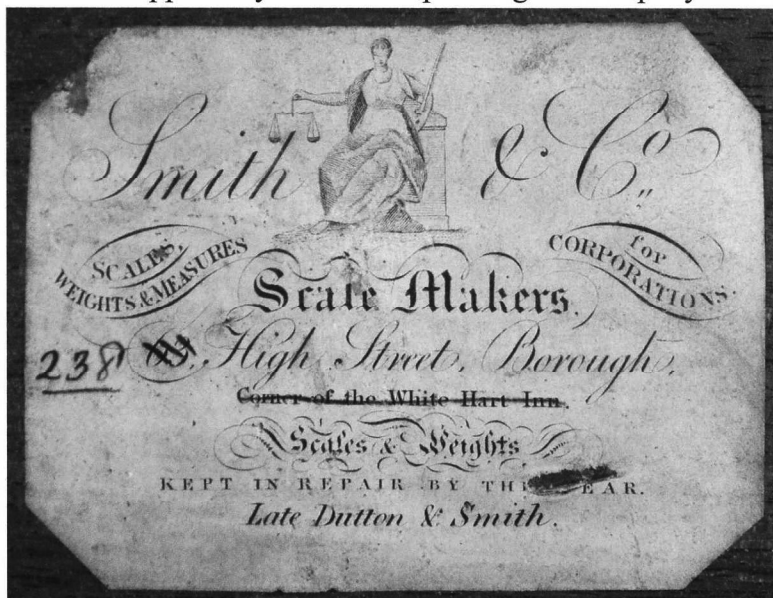
238 High St. Borough^{2,3}

58 High St, Borough, S.E. London⁴

158 High St, Borough, S.E. London.

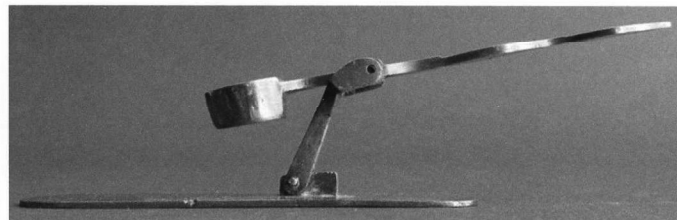
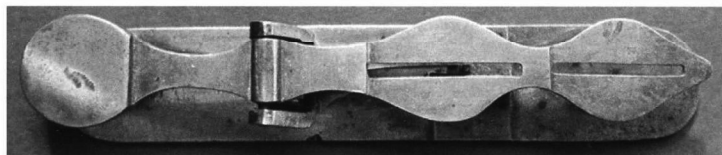
A label from Smith & Co, Scale Makers made for the 63 High Street, Borough address and corrected for a new address at 238 High Street is shown at right.

The SMITH & Co.'s Sovereign balance, Variant 1 has a very similar beam to a Folding sovereign rocker, Variant 2, which also uses a similar pivot hole attachment style and a brass base plate used by London scale makers on their Sovereign rockers. They appear to the author to be by the same maker:



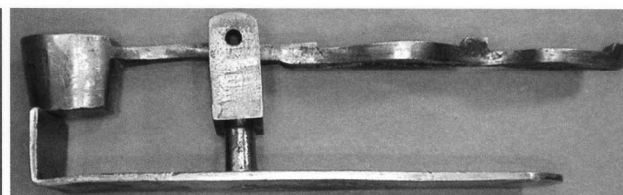
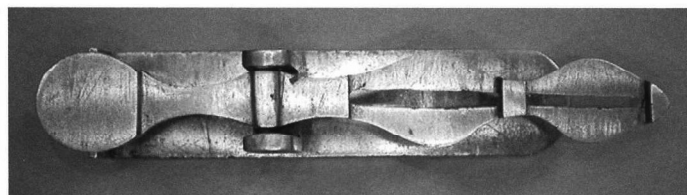
Label from Scale box by SMITH & Co.

These platters are similar to those used by William Lewis Nicholl, another London scale maker who was making Sovereign balances at about the same time as Smith & Co. WLN, who also apprenticed in the London Blacksmith's Company, made sovereign rockers that are distinguished by their use of adjustable pointed screws for the pivot point.



Variant 2: SMITH & Co.'s Folding Sovereign rocker. Note the use of screws on the column only, not for the pivot. Beam: 100mm. Base: 99mm. Height of fulcrum when erected, 30mm.

A second rocker, Variant 3 has a similar poise, arm and pivot column with pivot holes like the Variant 1 balance in the SMITH & Co. box, however, this one has the platter edge stops defined. This rocker also has a bent-base poise rest and a longer base. This is possibly an earlier version of the SMITH & Co. balance, Variant 1 that was perhaps cost reduced with a shorter base, and less brass and machining to implement the platters:

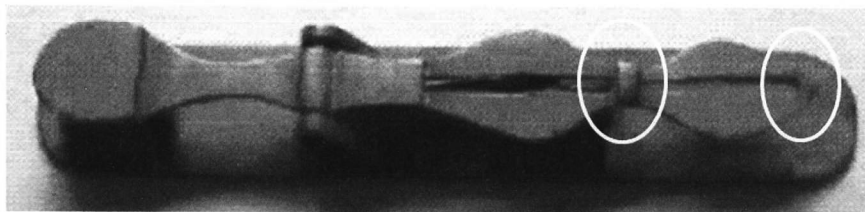


Variant 3: SMITH & Co.'s Sovereign balance.

Note the similar pivot column and pivot point to Variant 1 but with platter edge stops.

Beam Length 95mm. Width at Poise: 15mm. Base Length: 80mm. Width: 19mm. Poise rest Height: 12mm.

The next is a folding balance, Variant 4 with the same beam as above, only this time on a folding stand similar to Variant 2:

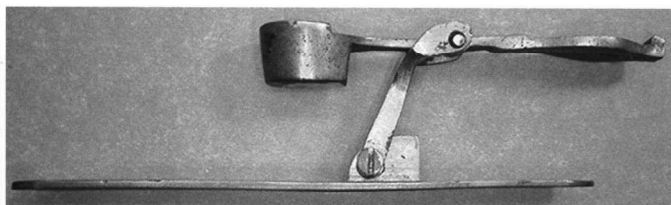
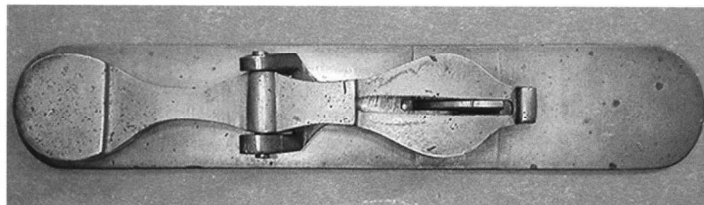


Variant 4: SMITH & Co.'s Folding Sovereign rocker.

Note the same poise, lack of screws at pivot point and the pan edges as the example above.

Beam Length 95mm. Width at Poise: 15mm. Base Length: 103mm. Width: 18.5mm.

Variant 4a is a Folding Sovereign rocker with the half-sovereign platter removed, the pivot repaired and the poise adjusted to test the Portuguese Moidore. It shows that the beam on a Folding version, as shown in Variant 4 was essentially the same as Variant 3 and that the Folding column was similar to Variant 2 with a screw and stop when the column is raised.

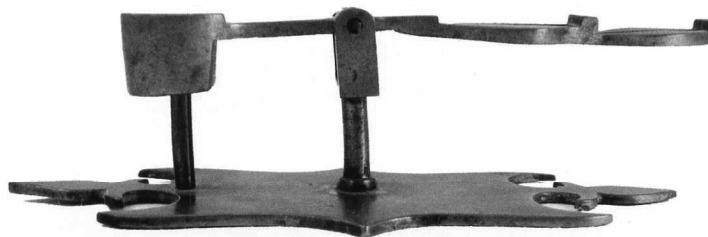
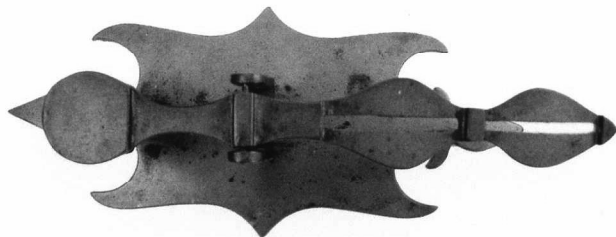


Variant 4a: SMITH & Co.'s Folding rocker with platter removed and pivot repaired.

Note the same poise, lack of screws at pivot point and the pan edges as the example above.

Beam Length 75mm. Width at Poise: 15mm. Base Length: 103mm. Width: 18.5mm.

There is also a High-riser rocker of the London Style with a column poise rest, Variant 5 with the same beam as Variants 3 and 4.



Variant 5: SMITH & Co.'s High-riser Sovereign rocker.

Beam Length: 95mm. Width at Poise: 15mm. Base Length: 107mm. Width: 48mm. Poise rest Height: 16mm.

All of these rockers have metal plate-bases combined with an unmarked poise, beam, pivot and platter style that distinguishes them from the common Birmingham brass sovereign rocker styles. The author believes that all of these rocker balances could have been made by the London scale maker, William Smith & Co. based on their similarities to the Variant 1 balance from the SMITH & Co. box.

In our musings, what can we conclude from this information? A few scale-makers made sovereign rockers. London trained scale-makers like Bartlett, Nicholl and now Smith & Co, made sovereign rockers in a style that is quite different from the Birmingham brass sovereign rocker. At least one Birmingham scale-maker, Whitfield, made sovereign rockers that more fit the Birmingham rocker style, however, in general scale-makers did not make sovereign rockers. Scale-makers also in general did not use crown stamps on their products with the exception of the Crowned WLN found on a few examples of Nicholl rockers.

Acknowledgements

The author would like to thank Diana Crawforth Hitchins, Eric and Judy Soslau and Graham Weeks for contributing images of their rockers to this article.

Notes & References

1. *London P.O. Directory* of 1840, 41, 42, 44, 46, 47, 49.
2. *Kelly's London Directory* of 1850, 52, 55, 60, 65, 69.
3. *Morris' London Directory* of 1871.
4. *Kelly's London Directory* of 1875, 85.